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Assam and Afghanistan

Assam is in the north-east region of India and borders with China in the north. Afghanistan is in the north-west of India and borders with the Soviet Union in the north.

Assam (precisely, the entire north-east region) is in turmoil. The Tass News Agency (Soviet Union) says, "Nets of rebels and separatists in India, Burma and Bangladesh united in an independent State, would enable Beijing to fulfil its expansionist plan of getting access to the Indian Ocean through the Bay of Bengal". It has knowledge that Beijing has long dreamed of creating in the South Asia a buffer state of a pro-Chinese type.

Afghanistan is now under the direct control of Soviet troops. China also holds the view that the Soviet Union had long cherished the idea of converting Afghanistan into its client-state for getting an access to the oil-rich Gulf area and using the Afghan soil as the spring-board for military operation against it.

Anyway, we Indians have both in north-west and in north-east frontier two number one Marxist-Leninists awaiting with troops to jump on one another overrunning our soil. This may be the beginning of the end of the drama of 'scientific' Marxism-Leninism but at a heavy cost of India.

Tass is correct that there are "rebels and separatists in India" who will act as the advance party of an invader. The world knows who are they in Afghanistan. But who are they in India ? Who are these "poisonous weeds" ? They should be identified and suitably treated with Stalinist-Maoist people's prescriptions. That is not enough. It should be admitted that they have grown out of proportion because of the country's post-independence experiment with "unity of opposites"—unity of capital-fed democracy and party-thrust doctrinal socialism. And now the 'unity' should be rectified.

Assam turmoil will collapse instantly if the poisonous weeds can be identified. The 'foreigner issue' is no issue for Assam. It is the concern of the country's security and an urgent affair of the entire nation. The nation will take care of it thanking Assam for highlighting the danger of infiltration. If need be, India should ask the country (or countries) of origin of these foreigners to take them back honourably or give out part of its territory peacefully to India for their respectful settlement. What concerns Assam is that it has been forced into the terrian of backward region. Uneven development of regions is the inherent bias and character of our five-year plans. Assam has brust out protesting, some others feel like brusting—the volcano is there.

This may not invite Afghan type revolution or Tibetan type armed intervention immediately but that it is looming large on the east and west horizons is a reality. The reality should not be skipped over. The country is without a clear purpose, the economic plans have ended in confusion, prices have free hands to rise, the economy is a total shambles, corruption is socially licensed, the road to power by being bribed by money owners and by bribing the people squandering the public money is a part of democratic process, indiscipline is the national slogan, and toleration of political compradors and exploitation of ignorance of the people are the State's policy. Thus the internal conditions are quite ripe for a patriotic social revolution. It should not be allowed to slip out to the hands of a super power. The revolution should be a guided one based upon the premises of "assimilations of outside bests with the country's bests". Ideologically, the country's bests are that man is the supreme and that the life is a means to serve the neighbour and not the end in physical embodiment. Socially, the country's best is a pluralistic society within the spelled out Indian basic thoughts of man and life. The outside bests are, economically, competition component in capitalistic structure; socially, social ownership of all national resources and state ownership of all factors of production and all-out participation of all in all matters as social workers in fulfilling the national goals at the optimum material level.

NOTICE

Due to the prolonged and extreme power cut by the Government the next issue will come out as a combined one in September 1980.

10.6.80

M. Roy
Manager

Multinational Corporations : The Exploiting Feuds—II

Som Deo*

The nature of the investment and the unequal economic positions obviously affect both the structure and methods of operations of the MNCs in the Third World. Investments of the MNCs are concentrated mostly on the extractive, plantations and service industries. The recent development in these concerns is that the MNCs are entering into the low priority goods[8] production like, confectionary. A great change has been made by the MNCs through the 'transfer of technology' to the developing countries. Actually, the technology transferred to the developing countries is no more relevent for them in their country because of stiff competition. Hence the obsolete technology is transferred to the developing countries in the name of the latest one.

The unethical example of over pricing has also come into practice, especially in drug prices. Exhibit III shows how the drug multinationals are discriminating by charging different prices at different places for the same drug.

Exibit III

Relative wholesale prices of Librium and Valium in four countries, March 1, 1975. (in dollars)

Country	L (Per 100 mg. capsules)	V (Per 100 mg. tablets)	L (Prices as % of U K price)	V (Prices as % of U K price)
U. K.	0.83	0.63	—	—
West Germany	0.38	5.35	527.7	849.2
Switzerland	4.75	5.44	572.3	908.4
U. S. A.	5.80	6.89	698.8	1093.7

Source : Business Week, June 16, 1975, p. 53 and letter by A. Hartman in Business Week, June 20, 1975.

Note : L = Librium
V = Valium

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Some glaring examples of over pricing by intra-firm transactions are also recorded. This phenomenon is very common for evading taxes by showing lesser profits and higher profits to the subsidiaries.

Exibit IV

Transfer pricing : Over pricing of imports of certain raw materials by firms connected with MNCs during 1970-73

(in / m%)

	Per unit price paid by domestic firms in lakhs	Per unit price paid by firms with MNCs connection	Extent of over
Paranitolune	0.0375	0.0537	143%
Sodium Nitrate	0 0116	0.0380	320%
Dibitrochlorobenze	0.0185	0.0321	347%
Orthotoludine	0.0531	0 1321	249%
Bromine	0.0876	0.1086	124%
Parahitrotolune	0.0375	0.1018	271%

Source : Subrahmaniam and Pillai ; Implication of Technology Transfer in Export led Growth Strategy, EPW, 1976 quoted by P. L. Sarkar, Transfer of Technology to Less Developed Countries, The Indian Economic Journal, October-December; 1978 p. 147.

It cannot be said the MNCs are incapable of making some contribution to the development of the developing countries. Many of them offer an instructive example of the international organisation of production. The operation facilitates the growth of employment and natural resources, transfer of advanced technology, capital and managerial know-how, and replenishment of national budgets. In many cases the MNCs have helped in eliminating the economic isolation. But it was not by chance that Marx pointed out that under capitalism "everything seems pregnent with its contrary". Because of their private property character the MNCs regard this contribution solely as capital loaned in advance for the subsequent exploitation of the rich natural resources of the developing countries and their cheap labour. The host country has to pay heavy price for allowing these giants into the economy in the form of plundering the natural wealth and depletion of the finances of the developing countries through the export of capital and profit remittances to their parent firms. The cost is also paid in some other ways which have social implications and cannot be identified without having gone into the deep.

The consequences of the MNCs working in the national economy are immensely criticised on various grounds. Admittedly the logic can be given both in favour and against. But in this age of planned economic development and march towards establishing the egalitarian pattern of society, the working of these giant corporations cannot be openly allowed for a gradual and 'camouflaged' erosion of development potentials of less developed countries.

Cost being paid by the developing countries

In developing countries the MNCs have emphasised on monocultural specialisation based on 'enclave' sectors in the economy which, although they absorb the national resources of young states, work above all for the market of the metropolitan countries and not for the development of the local economies. For example, subsidiaries of US MNCs in Latin America exported 82 5 per cent of their production of which about half went directly to the USA. The whole decisions are taken at their head offices abroad rather than on the spot. The MNCs have their own philosophy of regional development. Their enterprises are concentrated in coastal zones even if the plans of the 'host' country (like Brazil, Pakistan, Iran, etc.) give priority to the development of regions in the interior. They usually adopt the 'partial' narrow specifications of the enterprise established in manufacturing industry, while the most profitable stages of production are reserved for MNCs enterprises in developed countries. In the Latin American plans of IBM, for example, Chile was assigned the role of a producer of perforating cards, while De Beers refused to organise even the primary treatment of diamonds in Tanzania, Ghana, Sierra Leone and Angola. The result is that it is not the MNCs enterprises that are 'integrated' into the national economies of the host countries; it is rather the enclave of these sectors of this economy that is 'integrated' into the international production empires of the MNCs.

In the Philippines, 5 US MNCs operating in the mining industry controlled assets, sales and profits which were 2 or 3 times greater than those of the largest 17 local companies; out of the 1,000 firms engaged in the oil business, US Corporations account for the 80 per cent of the sales, 87 per cent of the assets and 98 per cent of the profits.[13]

The MNCs are responsible (but not solely) for disorganising the local labour market by paying more wage rate than that of local. As it has happened in Indonesia (for example, Rs. 500 daily as compared to Rs. 350-425).[14] It should be borne in mind that the narrowly specialised character of production of the MNCs train only a 'partial worker', whose skill it is difficult to apply in other sectors of the economy. Of the 40,000 workers engaged in 250 factories of the "electronic belt" in the Mexico, South of the Rio Grande, which supply electronic components to the US, 80% are young women between the age of 16 and 25 who were taught only a limited number of routine operations.[15] In Chile during 60 years of the dominance of the MNCs in the Copper Industry not a single Chilean economist was trained in this sector.

The method of lowering the cost of production by these MNCs is usually not so appreciable. They used to establish capital intensive enterprises rather than labour intensive ones. While the unemployment problems in the developing countries is quite aggressive. Moreover, the MNCs used to buy the existing business. So again there is no employment generation into the economy.

The formation of monopoly prices is another malpractice of the MNCs. About the price monopoly, "several instances of overcharging have been documented in Colombia, where subsidiaries in the pharmaceutical industry paid 155% more than the c i.f. price for intermediate drugs imported from the parent firms. Overcharging of 40% was also found in the rubber industry, 26% in the chemical industry and 16-60% in electronic industry".[16] According to Prof. R. Mueller, such a reduction during imports are equal for US MNCs operating in Latin America to 50% on the average and from 20% to 8.200% respectively as compared to the official foreign trade prices.[17]

Quite often the MNCs deliberately bring to the 'host' country the 'polluting' technology which contaminates the environment. In Peurto Rico, the petrochemical pollution inflicted a damage on the

(Continued on page 120)

Industrial Policy of India—A Critical Appraisal

Basudeb Sahoo*

Industrial development in India proceeded on a definite course only after Independence. The 1948 Industrial Policy Resolution modified and supplemented from time to time set the course along which the industrialisation of the country has to tread. Formulation of industrial policy bore the impact of the socio-politico-economic conditions and ideological fervour of the time and therefore to a considerable extent was realistic and pragmatic. The policy is intended to pursue the following goals.

i) A harmonious combination of public sector and private sector, with greater expansion of the former with a view to reducing concentration of economic power in private hands and opening out new avenues of industrialisation.

ii) Expansion and development of village and small industries for more employment and greater decentralisation.

iii) Improvement of the conditions of labour through fixation of fair wages and fair return on capital.

iv) Removing regional disparities. In a word, the industrial policy purported to secure a more equitable and more balanced industrial structure for the country capable of promoting rapid economic development and greater social welfare.

The paper attempts to analyse how far the above professed socialist goals have realised and to suggest policy measures for greater realisation of the goals.

The cardinal principle of India's Industrial Policy has been to effect a happy marriage between the public and private enterprises, the former being the stronger partner. The public sector has to expand to initiate development in new lines and the private sector has to conform to the plan accepted by the community.[1]

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The 1948 Industrial Policy divided industries into four broad categories, made industries under category I exclusive monopoly of the state, allowed the existing units in category II to stay for 10 years and made opening of new units in this category the sole prerogative of the state and made industries under category III subject to the planning and regulation by the state if and when it was felt necessary. The rest were made the private industries. The policy of 1948 reflected lack of ethusiasm for public enterprise and confidence in the efficiency of and support for the private enterprise. Particularly, the statement regarding industries under category II was a queer mixture of optimism and pessimism.[2] The Industrial Policy of 1956 put industries into three schedules. As to the industries in schedule B the policy enjoyed that the state would set up new units ; but private sector might supplement the public sector , private sector too could produce any item listed in schedule A and the state, in its turn, can enter the schedule, C ; the State assumed the right to acquire any undertaking. "The private sector became a sort of residuary legatee. Economic development was more explicitly equated with state enterprise.[3]

While accepting recommendations of Datta Committee, the Government in its Industrial Policy of 1970 prepared a list of core industries consisting of basic, critical and strategic ones. All new investments over Rs. 5 crores were deemed to be included in heavy investment sector and large industrial houses were allowed to take part in core and heavy investment sector except for industries reserved for the public sector under industrial policy resolution of 1956. The concept of joint sector suggested by Datta Committe was accepted in principle Government would apply the concept to major projects in core and heavy investment sector.

Slow growth of public sector industries and uncertainty seizing the private sector led to a further liberalisation of industrial policy enunciated in 1973. The policy included in core industries the industries having direct link with core industries and industries with large export potential accessible to the large industrial houses with assets not less than Rs. 20 crores and the foreign concerns. The Government was also expected to develop the joint sector as a promotional instrument. Cooperatives and small and medium entrepreneurs were to be encouraged to participate in the production of mass consumption goods with public sector playing a greater role.

On January 28, 1975 Mr. T A. Pai, then Minister for Industries and Supplies, expounded the idea of a 'National Sector', in which 49 per cent of equity shares can be purchased by the private sector. It was thought to promote efficiency and people's capitalism.

From the brief sketch of the main strands of our industrial policy it appears that the Government is consistently following the reconciliation approach of David Apter, reconciling the compulsions of the public sector with the claims and cravings of the private sector. While on the one hand there was steady expansion of the scope of the public sector, there was on the other hand more and more concession to the private sector, epecially to the large industrial houses. The role assigned to the public sector under 1948 and 1956 Industrial Policies was appreciated by G. D. Birla, the spokesman for the private sector, because public enterprise would "act as a generator of private enterprise".[4]

The public sector appeared beneficial to the private sector as the former would : a) Promote investment of the private companies by providing certain privileges from the Government. b) Would expand market for the private sector by generating purchasing power through huge investment. c) Would facilitate the supplies of products of the public sector to the private sector at reasonable prices,

The reconciliation approach was conceived not with a notice for long term welfare to people but for political sovereignty, military security and economic independence which would provide impulse to economic development [5] Freedom from the clutches of the foreign capitalists necessitated the development of indigenous capitalism, the need for military security and self-reliance in vital products promoted capitalist production by the State Consequently, the industrial policy was a consummate expression of state capitalism attempting to identify and regulate the operation of the laws of capitalism within the framework of "mixed economy", a multicoloured garland of economic and political institutions and measures serving the interest of the entire bourgeoisie through the functioning of private capitalist enterprise.[6]

The Industrial Policies of 1970, 1973 and 1975 show a pronounced bias towards large industrial houses and the ideas of "core and heavy investment sectors", "joint sector", "national sector" as propounded in the policies encourage the private sector to make an inroad into the crucial sectors and exercise control over the entire economy. A logical corollary to the policies encouraging private sector industries has been developing the growth of monopolies which have prevented capitalism from below and held back transformation of the economy.[7]

The industrial policy has tended to emphasise heavy industries to "construct and create a modern base of reproduction primarily for the capitalist developed sector of economy, not transforming all sectors on modern technical basis.[8] Policy proclamations regarding development of village and small industries mainly through cooperative method for decentralisation of economic power and wider employment have not been matched by real performance. Rather, some small industries have been dawn into the capitalst reproduction process, thanks to state aid.

We may now substantiate the views expressed above by statistics. The number of industrial units in public sector has gone up from 5 to 129, investment from Rs. 29 crores to Rs. 8973 crores between 1951 and 1976. But the share of Government enterprises in the total national income has not been very high in spite of its steady increase. In 1950-51 the share of public sector enterprises was 2.8 percent of the net national product (7.4 percent, if we include government administration) but it rose to 4.0 percent in 1960-61 and to 6.7 percent in 1968-69 (13.6 percent, if we include government administration). The share of the public sector in net domestic product at constant prices rose from 10.6 p. c. in 1960-61 to 20 p. c. in 1972-73. The share of public sector in total output of the organised industry and mining has gone up from 8. p.c. in 1960-61 to 30.00 p.c. in 1977.[9]

Lots of information are now available to show the growing concentration of wealth in the hands of a few industrial magnets. Datta Committee noticed that 20 large industrial houses accounted for 40.7 percent of total proposed investment on machinery and 41.4 percent of approved import of capital goods ; 73 big houses accounted for 44.4 percent of term finances from 1956 to 1966.[10] The monopoly commission found that 75 business groups comprising 1536 companies formed 47 percent of total assets of all non-government and non-banking companies.[11] This sort of economic concentration has pernicious repercussion. Dr. Lokanathan held "Concentration of wealth may lead to misdirection of investment because the more a person has the more he would do as he likes".[12]

Regional disparity in the industrial sphere continues to exist Of the total manufacturing output, Maharashtra accounts for 26.4 p c., West Bengal, 11.4 p.c., Gujarat 10.2 p.c. Tamilnadu 9 5 p.c. U.P. 6.9 p.c. Bihar·6.6, Andhra Pradesh 5.00 p c. Madhya Pradesh 4 4 p.c. and Karnataka 4.00 p.c. ; The above 9 states together account for 78.8 p c of factories, 76.7 p c of fixed capital and 83 p.c. of employment of factory sector. Control was the dominant note in our industrial policy and was considered as the right response to scarcity. It is evident that control has not ushered in a true socialist economy. It is debatable whether it has been suitable for removing scarcity. It is time that the emphasis shifts to developments.[13]

For the sake of control in the post Nehru era, nationalised financial institutions started converting their loans given to private enterprises into equity ; getting licence for expansion or for setting up new undertakings was made more difficult and vertical and horizontal combinations were ruled out. But in public sector, say, in iron and steel plants holding companies resulting in larger combines were set up in the interest of efficiency. For greater employment mixed technology for the entire economy and "dual technology" in basic industries were adopted. Advanced technology with high capital-labour ratio was favoured in basic production processes while the old fashioned methods and techniques with low capital labour ratio were favoured in auxiliary and subsidiary processed.[14]

Our economic policy has failed to solve the problem of unemployment. Unemployment in the county that covered only 2.5 percent of labour force in 1951 covered 2.8 percent in 1956, 4.6 percent in 1961, 6.5 percent in 1966 and 6.7 percent in 1971.[15] Industrial growth has not made a significant dent in the problem of unemployment. Employment in manufacturing and electricity etc. rose from 3.65 million in 1961 to 5.23 million in 1971 recording a growth of 43.6 percent. But production during the period rose by 75 percent. The lower rate of growth of employment as compared to the growth of production may be explained by change in composition of industrial production and technology having less employment potential.[16] Employment in March 1973 in manufacturing sector stood at 6.7 million and recorded a rise at the rate of only 0.6

percent per annum during the Fourth Plan period.[17] The growth of employment in India has lagged far behind the growth in productive capital employed. The compound annual rate of increase in percentage in respect of employment in manufacture was 3.46 between 1959 and 1970 against the corresponding rate of 18.36 in respect of productive capital in the period. The increase in capital intensity which is partly responsible for decline in the rate of employment growth is indicated by the rising share of depreciation in the gross value added in private corporate sector. The share went up from 9.1 percent in 1950-51/1954-55 to 13 4 percent in 1970-71/1972-73.[18] Tax incentive is one of the reasons for the increasing capital intensity. The increase in capital intensity may also be due to the pattern of industrialisation we have adopted. Between 1960 and 1973 industrial production in general increased by about 100 percent but production of capital good increased by 174 percent, that of intermediate goods increased by 75 percent and that of consumer goods rose by only 62 percent, consumer non-durable goods by 44 percent.[19] This sort of industrial development naturally tends to raise capital labour ratio and lower down the rate of growth of consumers goods affecting the economic conditions of the poor.

Manufacturing expenses as a proportion of the value of production has almost remained static during 1960-61 and 1973-74. But remuneration to employees has declined from 17.8 percent of the value of output in 1960-61 to 15.8 percent of the value of output in 1973-74. But during this period, other expenses, like managerial commissions etc. have grown in proportion. This is a sign of increasing plunder of the companies for private profit.[20] Similarly, the C.S O. data show that the share of wage paid to the workers in value-added in manufacture has declined from 39.6 percent in 1960 to 34.7 percent in 1969 whereas salaries to the non-workers as a percentage of value added rose from 11.4 in 1960 to 15.9 percent in 1967.[21] Notwithstanding, the fluctuating and not very encouraging trend of production, profit of the industrial concerns has always remained at an appreciable level. Gross profit as percentage of total capital employed in medium and large public limited companies has been all along above 10 percent between 1960-61 and 1973-74 except for the fact that it was around 7 percent during 1966-67 and 1969-70. Similar is the story about the profit after tax as percentage of net worth.[22] The spurt in profit during the Fourth Plan period is attributed to about 100 percent rise in money supply and 72 percent rise in price.

Data relating to the workers real earning in factory reveal no perceptible change during the plan period. Index number of real earning of factory worker (earning less than Rs. 200/- p. m.) with base 1951 as 100 stood at 104.5 in 1964 and the index number of real earning of factory worker (worker earning less than Rs. 400 p. m.) with base 1961 as 100 stood at 98 in 1970. There was perceptible fall in real earning in the subsequent years. Increase in money wage was greatly neutralised by price rise.[23]

As to decentralisation of economic power through development of small industries it will be suggestive to state that investment in small industry as percentage of investment in public sector was 2.0 p c. in 1st Plan, 2.5 p.c. in second plan, and 2 4 p c. in Third Plan, 1.9 p.c. in three annual plans, 1.6 p c. in Fourth Plan and about 1.7 p.c. in Fifth Plan.[24] This share of the small scale sector in industrial production in terms of value-added declined from 19.5 p.c. in 1968 to 16.1 p.c. in 1975-76. Obviously, small industries have not been given due weight.

The preceding discussions suggest reorientation of our industrial policy towards the socialist goals in the lines as under :

1. Public sector which has deepened and diversified our economy has to expand not only to cover basic industries but also essential consumer goods industries. But attention has to be paid to the improvement of its management and industrial relation. Rules and guidelines may be laid down for the operation of the public enterprise for efficient use of resources. These enterprises have to be guided by profit as it is done in Hungary and other East European countries.

2. The spirit of competitiveness has to be infused into the public enterprises. Even import of foreign goods may be alloyed for the purpose.

3. The idea of joint sector or national sector should be given a due trial along with the worker's participation in the management. If this is done, efficiency of the private managers, social reponsibility of government and watchful eyes of workers will be blended together to yield satisfactory results.

If discipline and sense of involvement are developed among the employees of the public enterprises then production would increase strikingly in public sector as it occurred (by 32%) in 1975/76.[25]

4. The pattern of industrial development has to undergo a change in favour of producing goods to meet the felt-needs of the common people. The top 10 percent of urban and rural population together eat up about 35.5 percent of total supply of industrial goods. The home market of the Indian industry has a narrow base.[26] This has to be widened by producing goods of common consumption at lower cost.

5. As to the technology, it may be said that no particular technology is suitable for all types of industries. An industry-mix suitable for the purpose of meeting social needs should be ascertained and this will determine the appropriate combination of capital and labour intensive techniques for different industries.[27] For greater employment and better decentralisation an intermediate technology on the line of Dr. Schumachar may be evolved by (a) upgrading traditional methods, (b) Redesigning high cost technology and (c) designing special new products.[28]

6. Regulation of wage on the basis of productivity and regulation of profit by promoting close and cordial relation between the Government and the private industries may be undertaken.

In fine, Indian policy in the industrial sector which "degenerated into an extravagent display of bureaucratic control and restrictions"[29], at least up to 1966, was reoriented towards a combination of growth and efficiency and to take practical measures free from ideological constraints to enthuse all the partners in the grand industrial endeavour for building up a true socialist welfare state. 'Janata's Industrial Policy announced in December, 1977 aimed at removing some of the previous lapses. A list of 19 industries was made to be opened for large industrial areas and foreign towns The investment of foreign concerns continued to be subjected to the guidelines on dilution of foreign equity and was examined with special reference to technological aspects and export possibilities.

Janata's Industrial Policy emphasised the development of small and cottage industries and expressed concern over the growth of large houses on borrowed funds from public financial institutions.

It proclaimed, "whatever can be produced by small and cottage industries must be produced only by them". The list of products exclusively reserved for small scale sector contained 500 items against 180 items earlier. The list was to be continuously reviewed so that capacity creation could not lag behind. Special attention was to be paid to units in the tiny sector with investment in machinery up to Rs. 1 lakh situated in towns with a population of less than 50,000 and in villages Government considered introducing special legislation for protecting interests of cottage and household industries.

A single all-inclusive agency named District Industrial Centre was constituted at District level to promote the development of small and rural industries The centre was to establish close link with the development banks and specialised institutions like Small Industries Service Industries Industrial Development Bank of India was asked to set up separate wing to deal with the credit requirement of this sector. Arrangements were made to develop and appreciate suitable small and simple machine for improving productivity of small industries. Large scale industries were dove-tailed to the programme for meeting the basic needs of the population through wider dispersal of small scale and village industries and strengthening of agriculture. Public sector was asked to look to the development of a wide range of ancillary industries and growth of decentralised production.

The policy places greater stress on small and cottage industries subject to the condition that its product be promoted at right cost with right quality. This left to Govt. to act on a case to case basis. "The main thrust of policy was in giving greater importance to demarcation of the spheres of activity with due flexibility of the small-scale and large-scale sectors than to demarcation of the areas of public and private and Indian and foreign sectors in the promotion and regulation of industries".[30]

Notwithstanding the admirable move in the right direction of promoting small and village industries, curbing the predominance of the big houses and re-orienting the public sector industrial activities, there remained some snags which could defeat the real purpose of the new industrial policy.

It is argued that the scale of production as such plays no significant part in determining costs and quality of production in the industries reserved for small scale operation. There has been no attempt at phasing out of the existing large industries in the reserved area. It has not been realised that concessions to small scale units either by way of credit or supply of inputs under prevailing conditions do not help to change the pattern of production or consumption and also do not help to adjust prices and costs which will served priority requirements. On the contrary it is well established that the small scale sector as now defined and regulated is an area of sweated labour and is used by the large-scale sector to divert material and financial resources towards non-priority areas. Positive measures were not contemplated to effect the required changes in the pattern of production and consumption and to stop the manipulated diversion of resources to the essential sector.

The attempt to benefit the really small entrepreneurs has been foiled by the emergence of large number of "split units" consisting of a number of legally separate small units which are really sub units of a larger venture. Some of the items listed for small industries like tools, implements and processed industrial materials require quite large capital and therefore can be operated only by people linked with large industries or money-bags.[31]

The real issues of our industrial policy are restructuring of industrial production to serve the needs of the poor millions instead of the rich few and decentralising and dispering the industrial power with a view to carrying the industries to the rural areas and into the hands of the people of small means. These require reshaping of our total plan in the true socialist colour and of providing an active line of assistance for promoting entrepreneurship, undertaking of productive venture and successfully marketing the output in rural areas.

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Social Indicators and Regional Development in Developing Countries: India—II

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Since the post world war II a significant rise in the expenditure on research and development in both private and corporate sectors of the economy is observed A similer rapid rise is observed in the public and private resources devoted to human investment in general. But these developments of knowledge and direct investment in human capital have also clearly pointed out the inadequacy of the present national income accounting system and, in particular, capital accounts for analysis of economic growth problems.[1] Seers and Jolly convincingly demonstrate the necessity of treating expenditures on education as investment in national income accounts, particularly in the developing countries, where weaknesses in education are often the main "bottleneck" in the process of economic and social development[2] In his recent paper presented at the United Nations Statistical Commission's meeting held in New Delhi, in November, 1976, Professor S Chakravarty also strongly recommended estimation of gross fixed capital formation in education as one of the social indicators in education for developing countries.[3]

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[1] T. W. Schultz, "Capital Formation by Education", *Journal of Political Economy*, Vol. 68 (1960), pp. 571-83 ; and his recent book, *Investment in Human Capital : The Role of Education*, (New York : The Free Press, 1971). Conference on Research in Income and Wealth, *Education, Income and Wealth*, Studies in Income and Wealth, Series No. 35 (New York : National Bureau of Economic Research, 1970).

[2] Dudly Seers and Richard Jolly, "The Treatment of Education in National Accounting", *The Review of Income and Wealth*, Series No. 12 (1966), 195-209.

[3] S. Chakravarty, "Guidelines for Social Indicators for Developing Countries", paper presented at the United Nations Statistical Commission's meeting, New Delhi, November, 1976. E/CN. 3/490.

Literacy Rates and Expenditure on Education in South Asia :[4] Functional literacy appears a significant factor in the process of economic development. The overall adult literacy rate in South Asia, between 1950 and 1960, increased by 51 per cent. Around 1950, out of a total population of 424 million in the region, only 21.3 per cent, or 90 million, were recorded as literate, whereas a decade later the rate was 32.2 per cent (Table 1). Middle South Asia, which accounts for 70 per cent of adult population, had a very low literacy rate of 17.4 per cent around 1950. It rose to 25.7 per cent around 1960. When the three sub-regions of the area are compared, the least progress seems to have been made by South West Asia region with only 27 per cent increase over the decade. For lack of comprehensive data for 1970 a similar comparison cannot be drawn.

However, a UNESCO study reveals that around 1970 adult literacy for MDCs was 96.5 per cent while it was 49.8 per cent for developing countries. If we consider 40 per cent level of adult literacy as a necessary, but not a sufficient condition for economic "take-off",[5] the South Asia region may require another decade or so to reach this goal. For example, it is estimated that the level of adult literacy in India, according to the 1971 census, is around 30 per cent.

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[4] According to the UNESCO classification scheme, South Asia includes 36 big and small countries, varying from India. Pakistan and Indonesia on the one hand, and Qatar, Maldive Islands and Brunei on the other. These 36 countries are divided into three broad subregions : Middle South Asia with 719 million ; South East Asia with 277 million ; and South West Asia with 70 million.

[5] Mary Jean Bowman and C. Arnold Anderson examined the relationship between literacy rate in 1950 and gross national product per capita in 1955 in 83 developed and underdeveloped countries. In 1950 the world literacy mean was 56 per cent (data for 136 countries), and the world mean per capita GNP for the same year was $200 (96 countries data) They divided their sample of 83 countries into three groups : (a) 32 LDCs with adult literacy rates below 40 per cent in which 1955 per capita GNP never exceeded $300 ; (b) 27 LDCs and MDCs in which literacy rates ranges from 30 to 70 per cent in which income was virtually uncorrelated with literacy ; and (c) 24 MDCs with literacy rates over 70 per cent, including 21 very rich countries with literacy rates over 90 per cent where 1955 per capita GNP always exceeded $500. Despite some reluctance to infer causation from correlations, the authors concluded that 40 per cent literacy rates seem to be a pre-requisite for incomes per head to exceed $300. See Mary Jean Bowman and C Arnold Anderson, "Concerning the Role of Education in Development", in *Old Societies and New States*, edited by C. Geertz (Chicago : Free Press of Glenco, 1963).

Public Expenditure: Free and universal education has been accepted as a basic human right in most of the LDCs, and many constitutions of the new nations have enshrined it as a fundamental right. Total enrollment in schools and universities almost quadrupled between 1950 and 1971. In South Asia, average annual rates of growth in primary and secondary school enrollment between 1950 and 1965 were estimated to be 7.0 per cent and 7.5 per cent respectively The share of education in national budgets has increased proportionately to enrollment for most of the LDCs, and now amounts on the average to 16 per cent. The annual rate of growth of educational expenditure in the 1960s has been about 13 per cent in Asia and 16 per cent in Africa (UNESCO data). For a sharper focus, we have further examined the educational expenditures for 36 countries included in the South Asia region. Middle South Asia, with an average GNP per capita of U S. $110 or less (excluding Iran and Ceylon), spends 6 per cent to 18 per cent of total government expenditures on education, and South East Asia, where average per capita GNP is much higher, ranging from U.S. $200 to U.S. $300, the percentage of government expenditure on education ranges from 15 to 22 (Table 2). Most of the Arab states in South West Asia have to spend a lesser proportion of their public budgets on education since economic levels, in comparison, are generally higher. It appears that the governmental efforts in promoting educational development, when viewed in comparison with other developing countries of the region, are not exclusively determined by the level of economic development (say GNP) alone. It is a rather well known observation that historical, cultural, social and political factors have much to do with the nature and extent of educational activities. But much less is known as to the nature and extent of the role played by those non-economic factors in this area of human activity.

If private funds and public funds are taken together, it is estimated that the developing countries, in general, are devoting 2 to 4 per cent of their national income to education as against 7 to 8 per cent spent by the developed countries. For the less developed world this represents a serious strain on the limited public resources, as the percentage of GNP passing through the governments' hands is almost twice (35-40%) in the developed countries and the corresponding figure for most of the developing countries is 12 to 17 per cent.

It is not difficult to present charts and tables to demonstrate how impressive quantitative improvements in education have been in many LDCs in recent decades. This record, though impressive, conceals the very serious problem of quality and wastage, which plagues the educational system of so many developing countries For example, of one hundred children entering primary schools, in developing countries, not more than thirty reach grade five. Educational systems, in general, fail to provide a satisfactory general education or a level of skill in the labour force suited to the national needs. An educational system which is irrelevant to the national environment, breeds discontent and frustration, be it in developed or developing countries. Education is an instrument and a part of development, and it requires, particularly in poor countries, a very great effort. The educational structure will have to be changed, improved and adapted to national needs.

It may be that we are seeking solutions to all our economic, social and political problems by ruthlessly attaching the inadequacies to one variable—education. The role of formal education in the classroom appears to have been exaggerated, particularly by the leaders and managers of this industry. Perhaps the vested interests, like in any other area of economic activity, have subtle, and sometimes not so subtle, ways of raising their ugly heads. No matter what changes are introduced in the educational systems, they will be of limited value to the youth of these countries if the agricultural systems in particular and the absorptive capacity of the economy are not revolutionized.

Let us briefly examine how educational expenditure is financed and how it is spent in a typical LDC of the region—India. Approximately, three-fourths of the direct expenditure on education is financed by the public funds, derived from various levels of government, and the remaining one-fourth comes from private sources, such as tuition fees and endowments (Table 3). Over the last 15 years, the contribution from tuition fees has declined, reflecting the policies intended to reduce the economic burden on the lower income groups.

Roughly speaking, 75-80% of the total expenditure is spent on salaries and the remaining 20-25% on administration and buildings, etc. The universities in India get less than half of their direct expenditure from the public funds, and the remainder is financed from the private and independent funds—primarily through tuition and examination fees. Still more striking is the fact that the general arts and science colleges in India receive the lowest contribution of 39% from public funds (Table 4).

V. Empirical Study of India

A regional analysis of social indicators of education—one of the universally accepted areas of social concern—is presented for India, by states Given the availability of data, the states which are the politico-administrative units of India, are taken as regions for analysis. Also two points of time, 1960-61 and 1969-70, are considered to trace changes over time.[6] Three variables are examined in this regard. One is the percentage of adult literacy, fifteen years old and over ; this variable is taken as an indicator of the stock of education among the out-of-school adult population.[7] The second variable is school enrollment of the relevant age-group, 6-17 years old. The third variable, teacher-pupil ratio, may be considered as a measure of the quality of education available.[8]

[6] The year 1969-70 is the latest and 1960-61 is the immediately preceeding year for which the required data for all the variables are available. Since the available data embrace state boundaries, we have taken, despite well known limitations, states as regions. For a discussion on the choice of regions in India, see : A K Bhattacharya, "Economic Regions in the Context of Development : Some Basic Considerations", *Artha-Vijnana*, Vol. 15, No. 1 (March, 1973), pp. 57-90.

[7] The data are from the Indian population census for 1961 and 1971. The cut-off age of 15, though arbitrary, is customary in the literature.

[8] Usually the variable used is student-teacher ratio. Since with development this variable is expected to decline in value while the other variables increase in values, instead teacher-ratio is used here for purposes of uniformity.

For a comparative study of the social and economic development over time, an additional variable, state per capita income, is included in the analysis. It was briefly discussed earlier in section II that the development of the *Goal Distribution Indicators* is highly desirable to evaluate the distribution of the aggregate output or input indicators, among regions, income groups, ethnic groups, social classes, etc. We have, therefore, attempted here to include distribution of literacy by rural and urban areas as well as by sex. Similarly, the enrollment ratios are presented separately for boys and girls.

For brevity and convenience, the variables are represented as follows :

L = Literacy level : Percentage among adults 15 years old and over ;
E = Enrollment Percentage of the relevant age group, 6-17 years old ;
T = Teacher-pupil ratio · Number of teachers per 10,000 students.

In addition, subscripts and superscripts are used for other categories. These are :

u = stands for urban areas
r = ,, rural areas
f = ,, females
m = ,, males
g = ,, girls
b = ,, boys
y = ,, state per capita income.

Fifteen Indian states are first ranked on the basis of each of these selected educational variables (Table 5) for 1969-70. The inter-relationship between these ranks is then examined for each year separately. Further, changes in the ranks over time, i e, between 1960-61 and 1969-70, are analysed. Finally, an attempt is made to devise a regional indicator of composite educational development, composed of *stock* of education, *flow* of education, and *quality* of education,

Ranks in educational indicators : The ranking order in terms of state per capita income, literacy level, and enrollment ratio present an interesting picture. Out of the top four ranking states in terms of per capita income in 1960-61—(Maharashtra, West Bengal, Gujarat and Punjab), only two (Maharashtra, 4th rank; West Bengal, 3rd rank) are included in the corresponding ranking by literacy levels, and only one state—Maharashtra, 4th rank—appears in the top-four groups when ranked by the enrollment ratios. Nine years later in 1969-70, almost a similar picture is observed.

Similarly, out of the bottom-four ranking states in terms of per capita income in 1960-61—(Bihar, Orissa. Uttar Pradesh and Jammu and Kashmir)—only two states—Uttar Pradesh, 12th rank; and Jammu and Kashmir, 14th rank—appear in the corresponding ranking by literacy levels. If we were to examine changes over time, 1960-61 and 1969-70, per capita income ranking presents interesting changes in both top and bottom ranking groups of four states each. Though the same four states continue to enjoy the top four positions, but with changed ranking. Punjab, ranked 4th in 1960-61, moved to 1st position in 1969-70, largely due to agricultural development—thanks to Green Revolution. On the other hand, Maharashtra suffered somewhat in terms of per capita income ranking, but she gained in terms of literacy ranking—moved from 4th rank in 1960-61 to 2nd rank in 1969-70—and also gained in enrollment ranking. From the limited sample available to us it appears that no uniform pattern in changing ranks is observed either over time or in terms of selected variables.

Relationship between economic and educational variables: Five different relationships among variables over time are examined. Adult literacy, by sex and by area (urban/rural); school enrollment for boys and girls; literacy and enrollment; literacy and teacher-pupil ratio; and enrollment and teacher-pupil ratio. Relationships as suggested by estimated rank correlations are positive in general, excepting those for the last two categories of "literacy and teacher-pupil ratio" and "enrollment and teacher-pupil ratio", where these are negative and statistically not significant. It is felt that the basic data from which these teacher-pupil ratios are derived are of doubtful validity and require re-examination. It may also be noted that the relationship between male urban literacy and female urban literacy which was high in 1960-61 became rather low and statistically not significant in 1969-70. It may indicate that different set of forces are at work in these two categories. Furthermore, the growing strength of the relationship over time between adult literacy and enrollment is in the expected direction. In other words, the *stock* of education, as measured by the literacy level, and the *flow* of education, as measured by the enrollment ratio, are fairly correlated, though the rate of growth is slow.

We have also examined four major relationships between income and educational development variables for 1960-61 and 1969-70 : (i) between income and *rural* literacy, total population as well as by sex ; (ii) between income and *urban* literacy ; (iii) between income and state literacy levels ; and (iv) between income and enrollment levels for boys and girls separately. For the same classification, we have also studied rank correlation coefficient for changes over time. The following general observations are made.

1. All the relationships examined and as represented by their rank correlation coefficients are positive and fairly high. However, four relationships out of the total of 24 estimated, are statistically not significant. These relationships are : income and rural literacy, income and urban male literacy, income and urban female literacy, and income and enrollment of boys

2. The level of literacy in the rural India, at least during 1960-61, was not highly related to the corresponding levels of states' economic development. But a significant increase observed in the relationship of all the three measures of rural literacy—male, female, and total population—during 1969-70 suggests that the importance of economic factors is significantly growing with time.

3. On the other hand, when we examine the relationship between income and urban literacy, we unmistakenly notice a significant decline in the value of coefficients. For example, for urban adult literacy, the coefficient declined by 43 per cent It is suggested that the non-economic factors have played an important role during these nine years under study in the progress of urban literacy in urban India.

4. The rural experience in India is exactly opposite of the corresponding urban development. The rank correlation coefficient between income and *rural* literacy increased by 65 per cent over 1960-61 and 1969-70. The importance of economic factors contrary to expectations and hopes and policies of economic planning in India, in the expansion of rural literacy has significantly increased.

5. The relationship between income and enrollment is equally interesting. The value of the coefficient for enrollment for boys declined over time by 30 per cent, but increased by 8 per cent for girls, thus underlining the declining importance of economic factors in the former and the increasing importance in the case of enrollment for girls.

6. Out of all the relationships over time studied, it is noticed that the highest positive correlation is for income per capital (0.915) and the lowest is for the enrollment of boys (0.543) The latter suggests that the importance of factors determining the enrollment ratio for boys is changing significantly over time

7. Very high and positive rank correlation coefficients for 1960-61 and 1969-70, for the rural literacy levels, either for males or females, indicate that the ranking positions have not changed much over time. In other words, high literacy states continue to enjoy their historic leads. But it is not so in the case of corresponding urban literacy rates. This fact alone amply demonstrates the regressive character of education in the developing countries where urban areas with vocal political power-base demand and enjoy far greater educational facilities, as measured by literacy levels and enrollment ratios, than are available in the rural India.

Composite Index of Educational Development. A rather crude attempt is made to construct an index of educational development by state. Three such indices are constructed : I_1 considers literacy rates for males, enrollment ratios for boys, and teacher-pupil ratio ; I_2 considers the same three variables for females only ; I_3 represents total population (male and female), again for three measures of educational development.

Such an index, I_1, is derived as follows :

$$I_1 = \frac{R_L + R_E + R_T}{3}$$

where R = regional relative of each measure[9]

R_L = relative measure of literacy level

R_E = relative measure of enrollment ratio

R_T = relative measure of teacher-pupil ratio

For example, $RL = \frac{\text{Value of the variable in each state}}{\text{Value of the variable at national level}} \times 100$

In the absence of any information on the relative weights of each variable in the total educational development, we have arbitrarily used equal weights in our estimation Further work in this area could provide some guidance for more appropriate weights Perhaps, from economic development point of view, the stock of education, as represented by literacy levels, should be given more weight And from the social point of view, particularly equity of opportunity, one might argue that enrollment ratio should be given more weight.

The following general relationships may be noted.

1. In both the years under study, the I_1, Index of *female* educational development, appears to bear positive close relationship to income index. In the other two cases, this relationship is less close.

2. Over time, the relationship between income and education, in terms of I_3, seems to have further correlated The value of the correlation coefficient, which was already very high in 1960-61, further increased by three per cent.

3. Each individual index of the educational development demonstrates no meaningful change in the ranking order of state over time. The correlation coefficients are positive and very high.

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[9] Relative measures are commonly used in regional analysis, see, among others, (i) H. S. Perloff, E. S. Dunn, Jr., E. E. Lampard, F. Muth, *Regions, Resources and Economic Growth*, Resources for the Future (Baltimore: Johns Hopkins Press, 1960); and (ii) F. A. Hanna, *State Income Differentials 1919-1950*, (Durham, N. C.: Duke University Press, 1959).

VI Developing Countries and Data Framework

It is evident from this simple exercise, as it is from other detailed investigation,[10] that the presently available data in our sample study (India) are too limited in nature to allow development and construction of social indicators in education. The situation with regard to educational data is expected to be more or less the same in most of the developing areas Asia. Therefore, serious efforts are required to collect necessary information.

Detailed guidelines have been laid down in various studies regarding the data, the classification and the indicators, for example, in a United Nations study, *Towards a System of Social and Demographic Statistics.* A revised draft guideline specially designed for developing countries was recently presented at the last session of the United Nations Statistical Commission meeting. It divides learning activities and educational services into four major categories. A Pupils and students ; B. Educational inputs and outputs ; C. Educational attainment of the population. Each major category, in turn, is identified into data items, characteristic classification and social indicators.

Chakravarty in his paper, "Guidelines for Social Indicators for Developing Countries", presented at the United Nations Statistical Commission meeting in New Delhi in November, 1976, outlined three main "series" of learning activities and educational services. Since these are the most comprehensive in nature and are specially designed for developing countries, a brief description seems desirable. The major divisions are : A. Educational attainments, a *stock* concept discussed above ; B. Educational enrollments, a *flow* concept ; C. Educational inputs. Educational attainments, in turn, are divided into four categories : (1) years of schooling completed, by specified ages ; (2) Number and percentage of literates in the population, specified by ages ; (3) Number and proportion of population at specified ages who have successfully completed specified levels of education—first level, second level, and third level ; (4) Number and percentage distribution of population according to mother tongue and knowledge of second language.

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[10] B. N. Ganguli and Devendra B. Gupta, *Levels of Living in India,* (New Delhi : S. Chand and Co., 1976), pp. 87-94.

Similarly, educational enrollment is identified in three categories : (1) Number and proportion of population enrolled full-time, specified dates ; (2) Number and proportion of specified years' enrollees who successfully completed that year ; and (3) Number and proportion of population enrolled part-time. Likewise educational inputs and outputs are categorized as : (1) Number of full time teachers engaged (annually) ; (2) Total consumption expenditure on education, in current and constant prices (annually) ; (3) Gross fixed capital formation in education, current prices (annually), and (4) Unrequited current transfers to institutions households from government for educational purposes (annually).

Series and sub-series are classified by sex, age, urban and rural geographic areas, ethnic origin or socio-economic classes, etc. A set of social indicators are suggested for each classification Thus, this model provides a comprehensive agenda for implementation if work in the area of social indicators is to progress at a rapid pace.

In addition to collecting necessary data on formal education imparted through institutions attempts should be made to gather information about skills and other qualifications acquired informally. Perhaps this could be done either through periodic surveys or along with population census. Nair and Dar, who have extensive first-hand knowledge of educational statistics in India, emphasize the reliability of basic statistics.[11] It is suggested that there may be considerable "over-reporting" if the financial aid of the institutions is linked with the value of the variable reported, i. e., school attendance or registration. It is also felt that essential data regarding drop-out rate, repeaters, and failures are not available at all. It goes without saying that the reliability of the social indicators or for that matter any other statistics will directly vary with the basic strength of the raw data.

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11. P.R.C. Nair, "An Appraisal of Educational Statistics in India", (Memeo). Paper presented at the Fourth Seminar on Data Base of Indian Economy, December, 1976, Banglore. T. N. Dar, "Educational Statistics in India", (Memeo). Fourth Seminar, Banglore, 19 6.

Table 1

Total Adult Population and Estimates of Literacy[a] around 1950 and 1960, South Asia

	Around 1950			Around 1960		
Broad Regions[b]	Adult Population (15 years and over) ('000)	Literacy Adults ('000)	Literacy Percent-	Adult Population (15 years and over) ('000)	Literacy Adults ('000)	Literacy Percentage
1. Middle South Asia	294,800	51,300	17.4	344,600	88,600	25.7
2. South East Asia	101,800	32,200	31,6	123,700	62,600	50.6
3. South West Asia	27,300	6,800	24.9	34,600	10,900	31.5
4. Total : South Asia	423,900	90,300	21.3	502,900	162,100	32.2

Notes : a. The criterion of literacy used in this Table is the ability to both read and write.
b. UNESCO groupings.

Source : UNESCO, Statistical Yearbook 1968, (Paris . 1969), Table 1.3, pp. 30-31.

Table 2 : Public Expenditure on Education, South Asia

Country	Year	As % of GNP	As % of Total Government Expenditure
Middle South Asia			
1. India	1966	2.5	17.8
2 Pakistan	1986	1.4	5.6
3. Iran	1969	3.3	6.8
4. Afghanistan	1965	n.a	11.1
5 Ceylon	1969	3.6	11.9
6. Nepal	1967	0.6	6.5
7. Bhutan	1968	n.a	15.2
8. Sikkim		n.a	n.a
9. Maldive Islands	1964	n.a	3.0
South-East Asia			
10. Indonesia	1960	0.7	n.a
11. Vietnam, Rep. of	1969	1.1	4.2
12. North Vietnam		n.a	n.a
13 Philippines	1968	3.1	n.a
14. Thailand	1969	3.4	16.3
15. Burma	1967	2.9	18.0
16. Malaysia	1969	5.3	15.6
17. Cambodia	1966	4.2	22.0
18. Brunei	1968	n.a	19.0
19. Laos	1969	n.a	10.7
20. Singapore	1969	4.5	15.2
21. Portugese Timor	1965	n.a	20.0
South-West Asia			
22. Turkey	1968	3.4	20.2
23. Iraq	1969	3.3	6.8
24. Saudi Arabia	1969	4.3	10.0
25. Syria	1969	4.5	17.1
26. Yemen	1969	3.0	11.8
27. Israel	1968	6.8	10.7
28. Jordan	1969	3.3	9.6
29. Lebanon	1968	2.5	16.9
30. Yemen, Southern	1968	2.5	11.8
31. Cyprus	1969	2.5	14.8
32. Muscat & Oman	—	n.a	n.a
33. Kuwait	1968	4.3	10.1
34. Bahrain	1969	n.a	25.4
35. Trucial Oman	—	n.a	n.a
36. Qatar	—	n.a	n.a
Total South Asia			

n. a. — not available

Source : UNESCO, Statistical Yearbook 1971, (Paris . 1972), Table 2.4.

Table 3

Public and Private Funds for Education in India[a] 1950-51, 1960-61, and 1966-67

	1950-51		1960-61		1966-67	
	Rupees Millions	Percentage of Total	Rupees Millions	Percentage of Total	Rupees Millions	Percentage of Total
Public Funds	**778**	**68.0**	**2,566**	**74.5**	**5,191**	**76.2**
1. Central Government	35	3.1	296	8.4	4,811	70.6
2. State Government	618	54.0	2,045	59.6		
3. Local Bodies (District Boards, etc.)	79	6.9	118	3.4	380	5.6
4. Municipalities	46	4.0	107	3.1		
Private Funds	**366**	32.0	**878**	25.5	**1,618**	23.8
5. Tuition Fees	233	20.4	590	17.2	1,080	15.9
6. Endowments, etc.	25	2.2	98	2.8		
7. Other Sources	108	9.4	190	5.5	538	7.9
Total	1,144	100.0	3,444	100.0	6,809	100.0

a. Recognised institutions only. Recognized institutions are those which are recognised by the government, or by a university or a Board of Education.

Source : Government of India, Ministry of Education, Education in India, Vol. I and II, and Central Statistical Organization, Government of India, Statistical Abstract India 1970, (New Delhi : 1972), Table 225, p. 655.

Table 4 : Public Expenditure, Direct and Indirect, on Education, By Level and Type, India, 1950-51, 1960-61, and 1966-67

Level and Type of Education	1950-51 Total Expenditure Rupees Million	1950-51 Total Expenditure %	1950-51 Govt Funds as % of Total Expen.	1960-61 Total Expenditure Rupees Million	1960-61 Total Expenditure %	1960-61 Govt Funds as % of Total Expen.	1966-67 Total Expenditure Rupees Million	1966-67 Total Expenditure %	1966-67 Govt Funds as % of Total Expen.
Total Direct Expenditure	911	79.5	54.8	2,572	74.8	63.9	5,568	81.80	n.a.
Higher Level									
1. Universities	49	4.3	40.7	141	4.1	46.2	427	6.27	n.a.
2. Research Institutes	6	0.6	90.6	27	0.8	90.8	20	0.30	n.a.
3. Arts & Science Colleges	72	6.3	38.3	209	6.1	39.2	461	6.77	n.a.
4. Professional Colleges	45	3.8		167	4.9	n.a.	545	8.00	n.a.
Secondary Level									
5. Secondary Schools	236	20.7	37.0	713	20.7	49.0	1,632	23.97	n.a.
6. Vocational Schools	37	3.2	75.3	114	3.3	79.4	110	1.62	n.a.
7. Special Schools	23	2.1	59.9	32	0.9	68.1			
Primary Level									
8. Middle School (VI-VIII Gr.)	77	6.7	51.0	429	12.5	74.1	960	14.10	n.a.
9. Primary School (I-V Gr.)	366	31.9	68.0	740	21.5	80.0	1,413	20.75	n.a.
Total Indirect Expenses	233	20.5	65.9	869	25.2	80.1	1,241	18.2	n.a.
10. Direction & Inspection	27	2.4	96.1	70	2.0	97.0			
11. Scholarships	35	3.1	79.8	200	5.8	92.1			
12. Miscellaneous	54	4.7	64.3	129	3.7	74.6			
13. Buildings, etc.	117	10.3	60.0	470	13.7	75.0			
Grand Total	1,144	100.0	68.0	3,441	100.0	74.5	6,809	100.0	n.a.

Source : Government of India, Ministry of Education, Education of India, Vols. I, II and Central Statistical Organisation, Statistical Abstract, India, 1970, (New Delhi : 1972), Table 26, pp. 656-660.

Table 5

Ranking By Educational Development, Indian States, 1969-70

	Rural Adult[a] Literacy		Urban Adult[a] Literacy		Enrollment—% of 6-17 age group			Teacher-pupil ratio (per 10,000 students)
	Male	Female	Male	Female	Boys	Girls	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	13	6	1	12	15	10	11	6
2. Assam	7	2	6	2	10	8	8	9
3. Bihar	10	13	13	6	11	14	14	12
4. Gujarat	4	3	4	5	2	5	4	14
5. Jammu-Kashmir	15	14	15	13	6	11	9	3
6. Karnataka	8	8	9	7	7	4	5	13
7. Kerala	1	1	5	1	4.5	1	1	10
8. Madhya Pradesh	11	12	7	10	12	13	13	4
9. Maharashtra	3	5	2	4	4.5	3	3	7
10. Orissa	6	10	8	11	9	12	12	2
11. Punjab	9	9	11	8	13	9	10	11
12. Rajasthan	14	15	12	14	14	15	15	1
13. Tamil Nadu	2	4	3	9	1	2	2	5
14. Uttar Pradesh	12	11	14	13	3	6	6	15
15. West Bengal	5	7	10	3	8	7	7	8

Notes : a. Fifteen years old and over.

Ground Rules for Economic Development

Michael Meacock*

Looking at the "free enterprise" economics, we find that laisser-faire conservatism leaves industry and commerce as uncontrolled as possible. Just as the absence of an umpire in a game can be used to advantage by the physically stronger players, so the minimum of economic rules helps the economically stronger—the wealthy employers—whose interests laisser-faire conservatism exists to support.

In a developing economy this system will normally attempt to maintain a large pool of well-disciplined labour—which in fact means low wages, high unemployment, and swift action by a reliable secret police against anything resembling the beginnings of Trade Unionism. Indeed a very similar situation existed in Britain at the beginning of the 19th century.

The sequel to this situation can either be revolution, or a gradual development towards greater political power of the working classes. With the second alternative commerce becomes a continuing dispute between employer and employee (over wages and conditions), and between producer and consumer (prices and quality). It is a fact of life in a developed free enterprise economy that commerce and industry is only as responsible, both to employees and to consumers, as it is compelled to be by employee power (trade unions), consumer power (competition) and the state of the national economy. With the continuing absence of rules and intervention by laisser-faire conservatism, the results are: instability of money (inflation), industrial unrest, and indifferent quality of merchandise. Investment—an essential key to increasing employment, productivity, and thus national prosperity—is more likely to be channelled into land and property speculation than into industry.

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* Wales / G. B

** This article is the second in the series of articles planned by the author.—Editor.

Faced with this admittedly unattractive situation, Socialism-communism reacts to the other extreme. Commerce is irresponsible—so the State takes it over completely. The results are well known ; shortages of everyday consumer goods, and gross mismanagement in agriculture and industry are accepted as a way of life in the Soviet Union. Enterprise and initiative are non-existant, and nothing can happen without the permission of the Great State Machine which, however great, could never be great enough to supplant the efforts of countless individual citizens.

In terms of government control, conservatism represents too little, allowing a condition of exploitation and dispute ; while socialism-communism represents too much control, which prohibits not only unfair trading, but all enterprises.

The policy of "freedom, until that freedom actively intrudes upon the freedom of another" clearly implies a foundation of free individual enterprise. A set of rules must then be imposed which limit unfair conduct and ensure fair play between all participants specifically between employer and employee, and between producer and consumer.

The salient features of this set of economic ground-rules must be :

(i) a national system of work evaluation defining wages and linked through to prices, (ii) national standards applicable to design, production and management to ensure maximum possible efficiency and quality ; (iii) national and local co-ordinative planning to ensure maximum benefit in use of resources, particularly financial investment.

Wage and Price Evaluation

It is an interesting thought that since the division of labour first took place, since the very first beginning of exchange and market trading, we have never ever faced—let alone settled—the issue of how to establish value fairly. And since we have no system for establising the value of goods and services, we also have no stable defined value for our monetary units. The only "system" of establishing value is dispute ...and then we are surprised that industrial, commercial and financial instabilities are causing worldwide disruption !

In developed countries, industrial instability is an increasingly serious problem, as is monetary instability manifesting itself as inflation. In addition, monetary instability can only be controlled by depressing economic activity, a destructive and prosperity-damaging solution.

In developing countries the absence of fair and universal wage evaluation causes wide discrepancies between industry and agriculture, town and country. Hence the migration to urban centres and consequent overcrowding. Due to high unemployment, low union organization and employee power, and the relative strength of employers, low wages can for a time be maintained—but this is no foundation on which to build growth and overall national prosperity.

The issue of wage and price evaluation is a world problem, affecting developed and developing countries differently, but equally seriously. It is an issue which must sooner or later be faced and settled—and the sooner the better.

The basis of wage and price evaluation is a decision in principle—an inescapable reflection of the Objective Policy of Non-Aggression—that value-in-exchange should be established by a fair and universal-national system of mathematical evaluation, rather than by dispute. Having made that decision of principle, the mechanics of action follow straightforwardly.

Each job can be analyzed down into its basic components —training, physical effort, mental concentration, responsibility, working conditions, and so on A system of points would then give each job a value in terms of a basic work unit. There are already serveral such systems in operation within a number of major companies in Britain and other countries, and the science of job-evaluation is relatively well advanced and developed. The value of the job becomes the wage or salary.

Now to prices. The output of an individual industrial or agricultural enterprise consists of 3 classes of costing : 1) a share of capital investment (itself costs in terms of labour units) ; 2) a share of overheads such as maintenance, power, administration and so on (also costs in terms of labour units) ; and 3) direct labour. Total costs can therefore be calculated in terms of labour units, and thus also a unit labour cost per item can be established. This unit labour cost then becomes the price.

What about a safety margin for lean years? This can be allowed as a justifiable element of overheads. What about managers' and directors' salaries? A fairly evaluated salary, fully reflecting the responsibility carried, has already been calculated in the labour cost. What about a bonus for workers and/or management? It is often difficult to evaluate that little extra effort which goes to make a successful year; a bonus, provided that it is fairly shared, can be a justifiable labour cost. What about directors' profits and privileges? No. This is the key divisive element which creates resentment and low productivity on the part of the workforce. Let management's talents, effort, expertise and responsibility be fully recognized in labour-evaluation—but no further rewards.

Now for the biggest question: what about profit for re-investment? The simple answer is that investment is the reverse of (and the complement to) saving. Saving is the right source for investment. If investment comes from profits, this represents a "tax" on the price which the consumer pays—enforced saving which in fact the consumer never gets paid back Another problem created when investment comes from profits is the widening of economically serious gulf between the wealthy established company and the young start-up enterprise. The problem of the old and wealthy company is to spend money—on anything!—before the tax-man gets it. While the young start-up company, which really needs cash for investment in new jobs, new ideas, and for working capital, is starved of investment.

The correct source of investment is via the banking system, either as savings, or as newly generated credit. Banking should advance credit at nominal rates, guided by the advice of national planning, and the capabilities of the applicant enterprise. [More of this in a later article].

Fair wages at all levels, fair prices, and investment via the banking system channelled for maximum benefit and productivity—a system such as this would wipe out industrial unrest and the consequent low productivity, and would provide a firm foundation for growth. And it would be a true reflection of the Objective Policy of Non-Aggression by providing (for the first time in economic history) a fair and equitable system of establishing value in exchange.

Commercial Standards

The essential issue of *Standards*—again a decision of principle reflecting the Objective Policy—is that the customer has a right to expect the highest avilable standards of quality. Standards thus become legally enforcable.

Standards apply in three broad categories: design, production, and management. An overall qualification in developing countries must be that products and production techniques should be appropriate to their emerging technology, recognizing the needs and capabilities of producer and consumer realistically.

The Standards Institute would provide a central clearinghouse of information for all new designs, production and management techniques and ideas, and would—even more significantly—ensure that the best in design and techniques fed through immediately into production. The sure knowledge that good design and newly developed techniques would be received, tested and fairly evaluated by a single central institution, and, if successful, would actually and immediately be put to use, would encourage an increasing flow and development of talent.

It is possible, indeed likely, that in a developing country, choice of certain products would be limited to ensure economic production runs. Many products should also be made as robust, plain and simple as possible to minimize maintenance. But lack of choice, and simple basic design, can be amply compensated if that plain, ubiquitous product can clearly be seen as a good design, which does its job perfectly and with unfailing reliability.

Standards would also cover administrative issues, agriculture (crop strains, management of agri-industries etc), house design and layout (standardized designs for ease of construction, yet capable of arrangement in infinitely differing patterns for interesting and "homely" village and urban layout). A standardized form of accounting is also important, and would be of especial value to small businesses and their bankers.

The influence of standards could obviously elevate design, production and management to undreamed-of heights, right across the nation. A big problem in developing countries could be communication of standards. The concept of a pace-setting district where the highest performance and application of standards can be assured, and which will act as a living example for the rest of the nation, will be proposed and expanded in a future article.

Could the Standards Institute become a dictator purveying faceless rubbish ? No. The Standards Institute is placed under legal obligation to provide information and guidance reflecting (i) the best available in design, and production/management techniques, (ii) Standards appropriate to production capabilities and consumer needs, and (3) Standards which satisfy consumer preferences. Failure to comply with these obligations implies that the Standards Institute is no longer accurately reflecting the Objective Policy ; this in turn removes the obligation on producers to observe incorrect standards, and furthermore brings the Standards Institute into confrontation with disciplinary action from the Constitutional Executive.

Assuming proper and disciplined function, however, standards ensure the encouragement of the best in design, and production/management techniques, and their rapid flow throughout the economy. Standards are backed by legal enforcement, and observance of standards would also be an essential pre-condition for obtaining bank investment.

Planning

The basis has already been established, that free individual enterprise is, and must be accepted as, the foundation of commerce and industry. Planning takes an overview, looking both at national and at local needs and capabilities, and looking also at the often conflicting needs of getting everybody working while at the same time increasing the productivity of those already in work. Planning is there to advise and to recommend rather than to impose, and the law would only be invoked if it could be shown that any particular economic activity was clearly in opposition to the needs of the overall national or local economy.

Planning is also necessary as guidance to the banking system to ensure that the scarce and valuable resource of investment is used to maximum benefit in developing the nation's prosperity.

Like standards, planning is subject to carefully formulated policy and constitutional disciplines to ensure against dictatorial and excessive planning, and to ensure that planning maintains that difficult but vital position where it gives maximum assistance to enterprise without harming enterprise or displacing it with the heavy hands of the State.

While keeping overall national developments in view, planning should operate basically at local district level, aiming at local development and local self-sufficiency in basic needs. This helps gain the understanding and support of the populace, and ensures maximum accuracy and usefulness of planning. It must also be accepted as a matter of fundamental principle that expensive grandiose prestige projects are to be avoided except where justifiable at every level after the most extensive national scrutiny. Real national prosperity will only be generated by raising the level, by getting everybody to work, and getting everybody working efficiently.

The individual desire to consume provides the natural initiative to produce ; government must provide the ground rules—fair wages and prices, a framework and discipline of quality, and the guidance of overview planning particularly applicable to establishing investment priorities.

Banking and Development

A facility normally extended by banks to clients buying and selling homes in Britain is a "bridging loan". Let us suppose that five people in a local community are buying and selling homes. There are five houses for sale, and five buyers—in other words five people are changing homes. The houses are all valued at approximately the same figure. The processes of legal documentation etc of buying and selling take some time ; no one can buy until he has sold his own house and obtained the money, but no one wants to sell and then be homeless until he buys another house. So no one can move. Money is needed to "oil the works"—to act as an exchange medium. So the bank "lends", or makes available an overdraft facility of the house-value to each of its clients buying and selling a home, as a "bridging loan" to cover the transaction. Now each can pay out at the appropriate time for the house he is buying, and received payment for the house he is selling, again at the convenient time in legal negotiations. When all five have bought and sold, and each is in his "new" house, each of their individual bank accounts will balance again, as each will have both bought and sold.

The example illustrates perfectly the basic need for, and the function of money. A market full of people; all have brought goods for exchange, all want goods to take home. But without an exchange medium—be it credit or commodity money—the exchanges cannot take place (except by direct barter which is a clumsy process).

Even though real production has taken place (or services are immediately available), and even though goods and services are needed for consumption, exchange cannot take place without a monetary exchange medium. And if there is no exchange, there will be no (or very little) production and consumption. The wheels of commerce, in other words, will grind to a halt.

There can be two types of money—commodity, and credit. Commodity money, as its name implies, is a real commodity—gold, silver, dried yaks' cheese, tins of coffee. It should be durable, portable, and universally acceptable. The advantage of the commodity as money is that it is useful in its own right and so requires no "confidence" to be accepted. But its disadvantage is that it costs real labour to produce; also its supply bears no relationship to the amount of goods and services to be exchanged and it can thus be excessive or scarce so affecting prices and commerce generally.

The other system is credit. Everyone who has brought goods to market is given a ledger account and a credit (or overdraft facility) to the value of the goods brought in This allows everyone to buy and sell freely until all goods have been exchanged. At the end of the day (excluding saving/investment and assuming everyone has bought and sold), the accounts of each and every participant will show a zero balance, since each will have sold and purchased, and each will have gone away with the same value of goods or services as he brought in. The "bridging loan" already described works in exactly the same way. The advantages of this credit-account system are (1) it is almost cost-less (the only real cost being the bank-clerk's time, pen and ink), and (2) it is infinitely flexible in terms of quantity, so that the credit made available at any given time may be precisely regulated to equal the value of goods and services to be exchanged, thus causing no price distortions through excess or insufficiency of purchasing power. The disadvantage of the credit-account system over the commodity system is that being costless to produce it must be operated with meticulous honesty and discipline if it is not to be misused and thereby cause commercial chaos and irreparable damage to industry and confidence.

Assuming that the issue of discipline and honesty can be assured, the credit-account system is obviously superior, and is now used in most developed countries It should in fact be understood that even commodity-based (ie gold-based) banking has for centuries worked on a fractional reserve basis, which means that for every Rs: 10 worth of real gold held, Rs. 90 are lent out as paper currency or credit. With a system entirely based on credit, there is no commodity reserve at all. In these circumstances two important factors must be kept in mind. First, banking has no sacred mystique, and the banker is not going to his vaults "to make funds available". He is simply marking an overdraft limit on the customer's card—a one-minute job requiring only pen and paper. But—point 2—if the discipline lies not in getting gold from the vault, it must lie elsewhere. The banker must now be sure that the total quantity of monetary credit issued (which means purchasing power created) can be absorbed into the economy; he must also be sure that the recipient bussiness will make good use of the credit, and that considerations of overall national and local priorities (Planning) are respected if the credit is to be put to maximum national benefit. These are the new disciplines, replacing the old discipline which, apart from the limitations of gold stocks, consisted of maximizing the banker's profit (now no longer a consideration following the introduction of wage and price evaluation).

The three essential factors of a monetary system are: (1) value of the monetary unit; (2) quantity of credit which the economy can absorbed, and (3) disciplines and criteria applicable to the issue of credit. These three factors may be examined systematically with specific reference to the national use of a wholly credit-account monetary system. (Indeed it would contribute to clearer thinking if the term "money" were now replaced by "credit-creation").

The first point at issue is *value*—what is a Rupee actually worth ? The simple answer at present is that it has no structural value whatsoever (nor does any other national currency). The permanent instability which every national currency now experiences is a direct result. The purpose of money—or credit-creation—is to facilitate the exchange of goods and services, and we have already established an evaluation system for wages and prices founded on a basic labour unit. Thus wages, prices, and now money, would all be defined in terms of work-done and the basic labbour unit.

The second factor is *quantity*—the global quantity which can be made available at any given time. This is an on-going estimation, and should be constantly monitored. A basic principle is that the purpose of credit-creation is to facilitate the exchange of existing goods and services. If goods and services available at the market are not selling, this is most likely to be a result of insufficient exchange facility, that is, credit-creation. The amount of credit demanding goods and services at the market should be approximately equal to the value of goods and services being offered.

It is interesting to note that in developed capitalist countries, where evaluation of wages and prices is settled by dispute, the only known method of keeping wages and prices from inflating rapidly is to maintain the total value of credit demanding goods *lower than* the total value of goods and services available. This has two effects. First, it forces producers to compete for scarce spend-in and thus reduces their profits and their prices (it also makes them more resistant to demand for wage-increases); second, it creates some unemployment which reduces the bargaining power of workers claiming wage-increases. This depressing of the economy below its potential capacity thus works to contain both wages and prices. The longterm structural damage to the economy is however considerable. With a national system of wage and price evaluation this would not be necessary, and the economy of a country operating such a wage and price evaluation system could be maintained at full capacity. With a system of wage/price evaluation, a developing country would be avoiding this danger, as development increases.

With an overall figure for the quantity of credit-creation which the economy can accept, the apportionment of this overall quantity for specific areas and categories of requirements would need to be established. This brings us to the third factor : disciplines and criteria of issue.

Perhaps the most important purpose of "overview" planning is the guidance of credit and thus investment into areas where the maximum benefit is to be achieved in terms of national development. This is particularly important when company expansion is no longer financed out of profits but out of bank-created credit. In addition to planned growth points, credit-creation must also maintain stability and reliability of existing loan agreements, must ensure expansion facilities for existing "customers", and should also allow for private personal credit needs particularly when these are for house purchase or acquisition of major consumer goods which cannot themselves expand without such consumer credit for their purchase. Research and development establishments will also rely on bank credit, again through the guidance of planning. The function of planning thus appears increasingly important—it must maintain stability and continuity, must be highly responsible, and it must look to the future through the finance of research, development, and new industries. The overall banking service would undoubtedly serve customers and industry best if it were split into several specialized services looking after various sectors—major industries, local agriculture, personal needs, venture capital for research and new industries, etc. This would ensure specialist understanding of specialist needs, and would also protect against unreasonable exercise of discretionary power by individual bank managers.

In assessing applications for credit, the bank will consider overall credit quantity availability, and the recommendations of planning. A further factor to be considered will be the applicant firm's compliance with standards ; do the applicant firm's designs, production and management techniques (especially accounting !) reflect maximum efficiency and comply with relevant standards ?

Having established credit recipients according to the above criteria, banks will not charge "interest", but only a service charge to cover interest administration. The use of interest rates by government and central bank to control credit is replaced by qualitative criteria as we have just noted. As for the profit aspect, banking is a service like any other, and becomes subject to the laws of wages, prices and profits as defined in the previous article. Nor will for the same reasons banking engage in profit-motivated speculation. Credit-creation is necessary to balance saving, and as new credit to facilitate the exchange of existing goods and services. Credit-creation is the function of banking, operating under strict disciplines and criteria, and with the overall controlling objective of creatively maximizing development and the general prosperity.

(Continued from page 80)

fishing industry and the sugar plantations which was greater than the revenue for the Island. In the Philippines, forest felling exceeded 9 times over the annual growth.[18] The importation of advanced technology has now been given the 'green light' in almost all developing countries. But the MNCs utilised the opportunity for their own purposes. They practice what is known as "package deals" when the importation of technology is made conditional on giving the MNCs permission for the simultaneous export of capital. Moreover, this technology first of all provided to those subsidiaries which are under cent per cent control of the MNCs and this technology reaches the mixed companies when it is obsolete.

The MNCs do not fear the tax evasions because of their influence. Here some of the MNCs begin the concealment of their profits from taxes. It is done by manipulating the accounts. Experts agree that in some MNCs the accounting is often shady.[19] Their 'intra-departmental' export and import transactions are determined solely by corporation manager and solely for the benefit and the profits of the Corporations. In Colombia, a number of MNCs reported to tax agencies a profit rate of 6.7% whereas a check up showed that it averaged 136%.[20]

(Continued)

Impact of Tractorisation on Cropping Pattern, Resource Use and Farm Earnings in the Punjab State

K. C. Dhawan*

The issue of mechanisation of Indian agriculture and especially the use of tractors and combines, etc., have once again appeared in forefront of policy at Central Government level. A viewpoint is being expressed that official partonage to encourage the use of tractors and other farm machinery would not be in line with the employment oriented strategy of government. A number of studies have been conducted in different parts of the country which produced contradictory results with respect to the effect of tractorisation on human labour employment, cropping pattern and intensity and productivity per unit of land area. Much of the controversy, I think, has been fruitless, is based largely on an inadequate knowledge of the agricultural sector by urban born prople. Mechanical appliances are often meant for increased efficiency and to reduce human toil and drudgery. Human drudgery involved in farming operations is proverbial. This needs to be mitigated to better the working conditions of the farm workers. Undoubtedly, it is a well-known fact that a worker is attracted to perform his duty sincerely when the conditions are congenial. Keeping these points in mind, the whole policy of mechanisation of agriculture may be reviewed and finalised.

It is a matter of common knowledge that agriculture is a seasonal industry and the shortage of human labour is felt in the peak periods. Admittedly, the traditional source of bullock power is not sufficient to cope with the work load for completing different operations in time. Further, weather is so uncertain at harvesting of rabi crops that if the produce is not handled timely, the chances of sustaining losses are numerous. Sowing of rabi crops overlaps the harvesting and threshing of kharif crops and the farmers have to invest in agricultural machinery, such as tractor, combines, etc. to avoid unforeseen damages to the crops.

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Enhanced irrigation facilities, adoption of biological technology coupled with other inputs have largely raised the production on the Punjab farms. To sustain the tempo of agricultural production, the farmers have found it essential to invest on long-term assets. Moreover, the traditional source of power on the Punjab farms were not enough for completion of various operations in time owing to enlarged volume of business. Generally, the farmers have invested on tractors and tubewells as items of long-term investment. But, of late, other items of long-term investment like land improvement, combine etc. are also becoming popular with the Punjab farmers and adding new dimensions to increasing production and timely completion of agricultural operations.

At present, foodgrains* production has increased from 2453 thousand metric tons in 1960-61 to 9004 thousand metrie tons in 1976-77 in the Punjab. It is almost four times more compared with the production in 1960-61. Further, the area under high-yielding strains has almost doubled from 1894 thousand hectares in 1970-71 to 3200 thousand hectares in 1977-78 and cropping intensity increased from 97.91 percent in 1961-62 to 160.00 per cent in 1977-78 in the Punjab. In contrast, the population of bullocks, the main source of draft power on the farms, has increased marginally from 12.53 lakhs in 1961 to 1408 lakhs in 1971 which constituted only an increase of 12.37 per cent. Under given facts and figures of foodgrain production and source of draft power, it was not possible to carry agriculture effectively with only bullock power. Thus it is essential to add mechanical draft power to the existing draft power on the farms to facilitate the adoption of multiple crop-mix and handle the operations associated with increased production timely and effectively. This is one of the reasons which forced the farmers to go in for the tractors even though these were not within their financial reach because of exorbitant high prices. In this article we have tried to measure the impact of tractors on certain parameters which affect the production and earnings of the farmers.

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* Statistical Abstract of Punjab, the Economic Adviser to Government of Punjab, Chandigarh, 1977.

This study was conducted in Ludhiana district of the Punjab state. The district was purposively selected because the district being one of those ditricts which has better facilities of Land Mortgage Banks that provide long-term credit for the installation of tubewells and purchase of tractors. This is obvious from the number[1] of tubewells (both diesel and electric operated) which increased from 35,257 during the year 1969-70 to 62,266 in the year 1975-76, and the number of tractors which increased from 4,189 to 8,284 in the same period.

Sampling technique

The multi-stage sampling technique was used with a block as a primary unit and operational holding as an ultimate units of selection. Pakhowal block was selected randomly A complete list of villages in the block was obtained from the 'Block Development Officer'. From the total of 64 villages, four villages were selected at random, which constituted six per cent of the total villages.

Categorization

A complete list of the farmers in the four chosen villages was compiled From a total of 325 farmers, 60 farmers, representing 18·5 per cent of the total, were chosen randomly for the enquiry.

Further, the holdings were divided into two broad categories:

i) Bullock and tubewell-operated holdings

ii) Tractor and tubewell-operated holdings

The comparison was made between these two categories. Since the tubewells were common to both the categories of farms, the comparison was made only on the basis of tractor and bullock farms. As the size of the holdings differed on both categories of farms, therefore, analysis was done on per acre basis.

Analysis of data

Enterprise budgets were prepared for individual crop for each selected farm. The use of human labour, bullock labour, seeds, fertilizers, total variable expenses, total value of output and net returns were estimated on per acre basis. The following parameters were studied to examine the differences between the bullock and the tractor operated farms.

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[1] Statistical Abstract of Punjab, Economic and Statistical Organisation, Government of Punjab Chandigarh, 1976.

Cropping pattern

It was hypothesized that an introduction of tractor on farms affected the cropping pattern. With added draft power, farm operations are completed timely. To analyse this variable, the percentage area under different crops on the farms was calculated.

$$\text{Percentage area under crop} = \frac{\text{Area under a crop on all the farms}}{\text{Gross cropped area on all the farms}} \times 100$$

Cropping intensity

To examine the intensity of land use, intensity of cropping on two categories were estimated. The following formula was used to estimate the cropping intensity of a particular farm.

$$\text{Cropping intesity} = \frac{\text{Gross cropped area}}{\text{Cultivatated area on farm}} \times 100$$

$$\begin{array}{l} \text{Average} \\ \text{cropping intensity} \end{array} = \frac{\sum_{j=1}^{n} I_j}{\text{No. of observations}}$$

Where I_j=Intensity of cropping of j_{th} farm ($j=1,\cdots,n$)

N=Number of farms in the sample

RESOURCE USE

Human labour use

The total human labour hours used for completing different agriculturel operations was determined for each crop on per acre basis. To estimate the average use of human labour per crop acre, weights were assigned to the total use of human labour by the acreage under a particular crop on the farms. Weighted average use of human labour per cropped area for each farm was found by using the following formula.

$$\begin{array}{l} \text{Average use of human} \\ \text{labour per cropped acre} \end{array} = \frac{\sum_{i=1}^{n} \sum_{i=1}^{k} a_{ij} X_{ij}}{\sum_{i=1}^{n} \sum_{j=1}^{k} X_{ij}}$$

Where a_{ij}=Use of human labour per acre for j_{th} crop on i_{th} farm ($i=1, 2\cdots n$)

x_{ij}=Area under j_{th} crop on i_{th} farm ($j=1,2\ldots K$)

The use of human labour for all the crops was estimated separately for the bullock and tractor operated farms. The averages of the farms were then compared to examine the difference in the use of human labour on two categories of farm. Similarly, the following parameters were estimated for making comparison between bullock and tractor-operated farms.

(i) Bullock labour use per cropped acre

(ii) Fertilizer use per cropped acre

(iii) Total variable expenses per cropped acre

(iv) Gross returns per cropped acre

(v) Net returns per cropped acre.

Statistical Tests Used

The Z-test was applied to test the differences in cropping pattern on bullock and tractor farms, if any

$$Z = \frac{(P_1 - P_2)}{\sqrt{PQ\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where $P = \frac{N_1P_1 + n_2P_2}{n_1 + n_2}$

$Q = 1 - P$

n_1 and n_2 are the numbers of observations on bullock and tractor farms respectively. P_1 and P_2 are the proportions of the area under particular crop on two categories of farm.

T-unpaired test was also applied to know the real differences in other parameters between two categories of farms.

$$t = \frac{\bar{X}_t - \bar{X}_b}{\sqrt{S^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where $S^2 = \frac{\Sigma(S_{it} - \bar{X}_t) + \Sigma(S_{ib} - \bar{X}_b)}{n_1 + n_2 - 2}$, $(i = 1, 2 \ldots\ldots, n)$

X_{ti} denotes i_{th} observation on tractor farms

X_{bi} denotes i_{th} observation on bullock farms

$\bar{X}_t$ is the mean value of parameter on tractor farms

$\bar{X}_b$ is the mean value of parameter on bullock farms

n_1 and n_2 represent the number of observations on tractor and bullock farms respectively.

RESULTS AND DISCUSSIONS

Cropping Pattern

The crop-mix raised by the farmers is presented in Table 1, which indicates the picture of product-mix on bullock and tractor farms during the year 1976-77. The principal crops grown were maize, cotton, groundnut in the *kharif* season and wheat in the *rabi* season. Besides these, sugarcane and paddy were also raised on a small area. Moreover, among vegetables *Bhindi* and among pulses *Arhar* were other cash crops raised on these farms The numerical values, presented in Table 1, relate to the percentage area under a particular crop. It is obvious from the table 1 that on tractor farms, the area under cotton was higher by 3.08 per cent than that of bullock-operated farms. Similarly, the area under *Bhindi* and wheat was also higher by 1·55 and 5·24 per cent respectively on the tractor farms. Interestingly, the area under maize crop on tractor farms was 2·04 per cent less than that of bullock-operated farms. As expected, the area under *kharif* fodder and the *rabi* fodder on tractor farms were 3·14 and 3·71 per cent lower than those of bullock farms. Thus, there was a slight positive shift in the area in favour of income bright enterprises, such as wheat, cotton and *Bhindi* on tractor farms because of reduction of area under kharif fodder and rabi fodder and that was made available for cash crops on tractor farms. Dr. Grewal (1973)[1] and Mr. Rachhpal (1977)[10] reported that there was a shift in cropping pattern on tractor farms towards more specialised and remunerative enterprises. Anyhow, it could not be confirmed statistically. Further, *Z*-test was applied to test the differences, if any, between the areas under a crop on two categories of farms. The Z values for all crops were found to be non-significant at 5 per cent level which showed that there was little difference in the per cent distribution of area under different crops on bullock and tractor farms.

Cropping Intensity

The concept of cropping intensity was used to reflect the land use intensity and thereby productivity on the farms. The average intensity is set out in Table 2. The average cropping intensity on bullock-farms was 179·81 per cent while it worked out to be 176·67 per cent on tractor-farms. Thus cropping intensity on bullock farms was higher by 3·14 per cent than on tractor farms However, Z-test was applied which indicated that there was no difference in this parameter between bullock and tractor farms. However, the findings of Dr. Kahlon (1970)[5] differed from ours.

Table 1. Cropping pattern on bullock and tractor-operated farms in Pakhowal Block of Ludhiana District, Punjab State, 1976-77

Crop	Percentage area (Bullock farms)	Percentage area (Tractor farms)	Calculated Z-values
1. Maize	16·58	14·54	0·217NS
2. Groundnut	4·39	4·25	0·026NS
3. Cotton	6·71	9·79	0 433NS
4. Paddy	1·56	1·67	0·033NS
5. Sugarcane	1·91	1·56	0·103NS
6. *Bhindi*	5·05	6·60	0·256NS
7. *Arhar*	2·50	1·90	0·158NS
8. Wheat	43·13	48·37	0·407NS
9. Kharif fodder	8·84	5·70	0·468NS
20. Rabi fodder	9·33	5·62	0·546NS

NS=means not significant at 5 per cent level

Note : The number of observations was 30 for both bullock and tractor categories.

Human Labour Use

The human labour resource constitutes an integral part of agricultural system for completing various agricultural tasks. The use of human labour was measured in term of adult man units, employed per cropped acre. The employment of human labour differs from farm to farm subject to availability of draft power on the farms. Table 2 clearly shows that the use of human labour on bullock and tractor farms was 303·10 and 259.84 hours per cropped acre respectively and the difference was to the tune of 43·26 hours which indicated a decline by 14·27 percent on the tractor farms compared to bullock farms. T-test was applied to know the real difference in the use of this parameter on both categories of farm. The calculated t-value was 7·12 which was significant at one per cent level. This clearly indicated that tractors displaced human labour at the farms.

However, it is a one-sided picture. How much off-farm employment is generated by way of manufacturing of tractors, allied equipments and implements, spare parts and their repairs is still remained to be answered. Further, it is well known that the Punjab state has the highest intensity of cropping in the country, has the highest productivity for the principal crops and make the highest contribution to the central pool of food reserves. Again, it is the Punjab state where the intensity of labour use seems to be the highest per unit area basis though the number of tractor is maximum compared to other states. This observation is amply supported by the fact that an estimated migratory labour force numbering 2 lakhs approximately from the adjoining state of U. P., Rajasthan, Bihar, etc. is employed in the Punjab state. So, we think that tractorisation, taking the totality of the whole situation into consideration, has no detrimental effect on employment of human labour. These views were supported by many studies (1, 2, 3, 5, 6, 10 and 11).

Bullock Labour Use

Bullock labour is an important source of draft power employed extensively in developing countries of Asia. The use of bullock labour is also set in Table 2. The bullock farms utilised 104·66 hours of bullock power, whereas tractor-farms utilised merely 5·19 hours per cropped acre. Thus, the difference was to the extent of 99·47 hours which showed a decline by 95·92 per cent on the tractor farms. The calculated t-value was 21·74 which was found to be significant at one per cent level, implying that the introduction of tractor had affected the use of bullock labour drastically.

Fertilizer Use

Ever since the onset of green revolution in 1966, which brought high-yielding seeds into the farmers resource-mix, the use of chemical fertilizers has become 'a must'. Thus the high-yielding varieties coupled with chemical fertilizers have become important variable input in raising per unit yield and consequently the production on farm as a whole. Table 2 exhibits the results of fertilizer use on different categories of farms. The use of fertilizers on bullock and tractor farms was Rs. 276.99 and Rs. 354.52 per cropped acre respectively. The calculated 't' value was 11.63 which was significant at one per cent level and the use was higher on tractor farms by 22 90 per cent. This clearly showed that, on an average, tractor farms used more chemical fertilizers than that of bullock farms and it is a healthy trend developing in the Punjab agriculture. This finding was in line with most of the studies referred to here.

Table 2. **Resource use on tractor and bullock-operated farms in Ludhiana District of Punjab, 1976-77**

Sr. No.	Items	Unit	Bullock farm	Tractor	'T' Value	Absolute change over bullock farms	Percentage change over bullock farms
1.	Human labour	hours	303·10	259·84	7·12*	-43·26	—14·27
2.	Bullock labour	hours	104·66	5·19	21·74*	—99·47	—95·92
3.	Fertilizer	rupees	276·99	354·52	11·63*	+77·53	+22·90
4.	Gross returns	rupees	995·55	1404·09	24·55*	+408·54	+41·03
5.	Variable expenses	rupees	614·96	785·86	12·27*	+171·04	+26·81
6.	Net returns	rupees	432·92	632 99	9.79*	+200·07	+45.54
7.	Cropping intensity	percentage	179·81	176 67	0·580NS	—3·14	—

* means significant at one per cent level.

NS means not significant even at 10 per cent level.

Note : The number of observations in each case was 30,

Gross Returns

Gross return is one of the tools to measure the efficiency of the farms.

It is obvious from Table 2 that the average gross returns were found to be Rs. 999 53 and Rs. 1404 09 per cropped acre on bullock and tractor farms respectively. The difference was to the extent of Rs. 408.56 between the two categories of farm. The calculated 't' value was 24.55 which was significant at one per cent level This clearly implied that tractor farms had more gross returns than that of bullock farms. Similar results were reported by Mr. Singh (1977)[10],

Variable Expenses

Variable expenses are one of the parameters which reflect efficiency of the farms indirectly, which means more expenses per acre, more use of inputs and consequently more production. It may be partly true. The average variable expenses are also presented in Table 2. These were to the tune of Rs. 614.96 on bullock farms and Rs. 785.86

per cropped acre on tractor farms. The calculated t-value was 12.38 which was significant at one per cent level. The tractor farms spent higher amount of variable inputs by 27.81 per cent in relation to bullock farms. Thus tractor farms spent more on working expenses and also got higher amount of gross per unit of area.

Net Returns

Net return (gross margin) is another measure to analyse the efficiency of the farm. It seems to be more efficient than gross returns as it takes into account variable costs. In fact, it is generally used to measure the productivity of the farms. It is clear from Table 2 that the average net returns on bullock and tractor farms were Rs. 432.92 and Rs. 632.99 per cropped acre respectively which amounted to 45.54 per cent higher income on tractor farms. The calculated 't' value was 9.79 which was significant at one per cent level, indicating more income on tractor farms compared to bullock farms. This conclusion is also in line with the findings of many studies mentioned here (1,4,7,8,10 and 12).

Briefly, over-all analysis of cropping pattern and intensity of cropping revealed no significant difference in the parameters between two categories of farm. Further, the tractor farms employed less human labour compared to bullock farms, whereas there was a drastic cut in bullock power use on the tractor farms. Presumably, sufficient off-farm employment is generated by way of manufacturing of tractor, allied equipment and machinery, spare parts and their repairs to compensate a small displacement of human labour at the farms. However, the tractor farms used significantly higher doses of chemical fertilizers than bullock-operated farms. Similarly, gross returns, variable expenses and net returns were also higher on the tractor farms irrespective of the size of holding. Higher yields and consequently higher net returns on tractor farms were attributed to higher doses of chemical fertilizer and timely completion of agricultural operations which were due to better availability of power on these farms, which also enhanced the yield of various crops and facilitated the adoption of multiple crop-mix.

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The Employment Exchange Service in Karnataka State—India

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According to the results of the field study, the services rendered by the Employment Exchanges are ineffective. Only five persons out of the total labour force of 17,353 reported that they had obtained their jobs through the Employment Exchanges. Of the 4,478 educated unemployed, only 354, not fully 8 per cent, had their names currently registered with an Employment Exchanges. The main reasons given for not registering with the exchanges were : lack of confidence in the functioning of the Employment Exchanges, the long distance between e g. the village in question and the district headquarters and a sort of diffidence as to whether they could secure a job in which they would be interested.

People in the urban areas were, not surprisingly, comparatively better informed about the services provided by the Employment Exchanges than those in the rural areas ; the services are more easily accessible in the cities. However, the proportion of the registrants was not very much higher in the cities, only 9 per cent as compared to 7 per cent in the rural areas. In both sectors, there is a considerable apathy regarding the Employment Exchanges. Due to continuous fruastrations, many unemployed have turned quite cynical.

The results of this field study show the contribution of the Employment Exchanges in minimizing, let alone solving, the problem of unemployment in Karnataka has been only marginal.

Employment Exchanges

According to the recommendations of the "Committee on Employment Service" sponsored in 1948 by the International Labour Organisation the functions of employment exchanges should be, to ensure, in co-operation with other public and private bodies concerned, the best possible organisation of industrial, agricultural and other employment as an integral part of the national programme for the full use of productive measures.[1]

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It was not until 1945 that a regular Employment Exchange came into being in Karnataka. Its services were at first meant mainly for helping men and women discharged from military service, as at that time the problem had assumed serious proportions consequent on the end of the Second World War. In the late 1940s, the Government of India opened the Employment Exchange facilities to all categories of the unemployed. The Regional Employment Exchange at Bangalore was the first to extend its operation covering the then Mysore State of nine districts. In 1952, one more Employment Exchange was established at Mysore City for the benefit of the residents of the districts of Mysore, Mandya and Hassan. After the re-organisation of the State in 1956, Employment Exchanges came to be established gradually at the headquarters of all the 19 districts of the State. There were only 7 Employment Exchanges in Karnataka during 1956-1958 as compared to 13 in Andhra Pradesh. In 1959, the number increased to 11 and in 1960 4 more Employment Exchanges were added and the process continued till the end of 1962, by which time the State had 20 Employment Exchanges—one in each district and an additional one at Bangalore, the State capital. Even this number seems to be inadequate if one considers the output of educated young men and women by various educational and training institutions in the State. Certain districts are large in geographical area while certain others have large population concentrations. In all such districts (e.g. Dharwar, Bijapur, Belgaum, Gulbarga, Raichur etc.) the State should establish at least one more Employment Exchange, so that its services can reach a larger section of the population.

At present the Employment Exchanges are concerned almost exclusively with the educated and skilled personnel and there is hardly any provision to serve the uneducted and unskilled ruralites. This lacuna may be overcome by establishing Employment Exchanges at the rate of one exchange for every 100,000 population or at the headquarters of each taluk for the benefit of the villagers. Such a measure would help the State to get accurate statistics about unemployment in rural and urban sectors and in turn would help in planning for optimum utilisation of available manpower in various regions.

The budgetary provisions for Employment Exchanges are quite inadequate and sometimes irrational. For example, in the Annual Plan for 1975-1976, the budget estimate for Employment Exchanges was Rs. 350,000. However, the estimate was revised later and reduced to Rs. 180,000.[2]

Employment Exchange for physically handicapped

According to a rough estimate there are 3.5 million physically handicapped persons in Karnataka. They have to struggle hard to acquire educational or vocational qualifications and then compete with the normal persons for securing employment.[3] The State has not officially identified this group as a weaker section of the society to receive special treatment. However, some marginal concessions are offered regarding admissions to technical courses, grants of scholarships and preferential consideration for certain types of jobs. Statutory safeguards such as relaxation of age limits and qualification bars at the time of recruitment and reservation of a certain percentage of jobs in various categories are essential, if the State is committed to ensure the welfare of this unfortunate section of the population.

At present one Employment Exchange, started in 1962, is functioning at Bangalore for rendering service exclusively to the handicapped persons. The Government of India have earmarked Rs. 110 million in the Fifth Five Year plan for expansion of the organisation for rehabilitation of the physically handicapped. In Karnataka, it is necessary not only to open a few more such Employment Exchanges but also to issue effective directions to public and private industries and public institutions to accord preferential treatment to the handicapped in the matter of recruitment.

The Scheduled Castes and Scheduled Tribes as also certain others classed as "backward classes"[4] have for quite some time been enjoying special treatment and job reservations. It was recently announced in the Legislative Assembly by the Labour Minister for Karnataka that a separate Employment Exchange would be opened in Bangalore for exclusively handling the applications of the Scheduled Castes and Scheduled Tribes in respect of jobs reserved for them.[5]

Live register projections

Statistical data available with the Employment Exchanges constitute an important source of material for studying the problem of unemployment. These data, however, are not complete; they cover only urban areas and only the educated unemployed. All the unemployed need not necessarily register their names and all the registrants need not be unemployed.

A survey conducted by the Bureau of Economics and Statistics in Kerala in 1962 revealed that about 32 per cent of the persons registered as unemployed in the live registers of the various employment exchanges were actually employed.[6] A similar investigation in Karnataka in 1971 showed that the proportion of such persons was 49 per cent.[7] Therefore, these statistics may be looked upon as mere approximations which may indicate the trends.

The number of applicants on the live registers of Karnataka and the percentage of placements each year are indicated in the following table, where the percentage placements in the adjoining States are also given for comparison.

A perusal of figures relating to Karnataka shows the number of applicants on the live registers has rapidly increased during the past decade and how with regard to placements it has not been possible for these exchanges even to keep up the status quo. The number of registrants has increased by about 15 times during a period of 20 years. This phenomenal increase may be attributed to the expansion of the Employment Exchange services to all the districts of the state and the awareness created by its activities among the general public. In the initial stages, up to 1963, in spite of a considerable increase in the number of registrants, the percentage of placements did show a positive trend. But after 1962, except for a slight upward push in 1969 and again in 1971, the general tendency has been that of steady decline in the percentage of placements. Obviously, the growth of employment over these years has not kept pace with the influx of persons to the labour market. According to employment market information reports, during the period 1957 to 1973, the employment growth rate in the organised sector was less than even 5 per cent. Naturally the result has been that of mounting unemployment and the consequent severe competition among the aspirants.

It is obvious from the above statement that the performance of Employment Exchanges in the adjoining States is equally unsatisfactory, In Kerala at the end of 1974, there were 588,000 registrants as compared to 157,000 in 1966.[8] During the same period, the percentage of placements to applicants suffered a steep decline, from 10 7 per cent to a mere 2.3 per cent. In Kerala too the percentage of placements registered appreciable increases during the early phase but from 1962, except for a sudden spurt in 1966, the general trend has been that of a continuous decline. In Andhra Pradesh the number of registrants stood at 281,063 in 1870 compared to 102,589 in 1960. The decadal increase in

Table 1. Placements by the Employment Exchanges of Karnataka Kerala, Andhra Pradesh and Tamil Nadu

Year	Karnataka		Kerala	Andhra Pradesh	Tamil Nadu
	No. of applicants on Live Register at the end of the year	Percentage of placements during the year	Percentage of placements during the year	Percentage of placements during the year	Percentage of placements during the year
1956	25,524	9.7	N.A.	N.A.	N.A.
1957	29,060	8.6	N.A.	16.3	N-A.
1958	40,507	11.0	6.1	18.5	N.A.
1959	51,954	11.0	8.9	17.7	N.A.
1960	68,654	11.6	N.A.	N.A.	N.A.
1961	83,412	15.2	13.7	N.A.	N.A.
1962	95,589	15.0	12.4	18.6	N.A.
1963	110,002	13.2	12.8	21.7	16.35
1964	117,334	11.8	10.2	27.6	18.05
1965	138,942	12.0	13.1	28.5	20.84
1966	148,688	11.3	10.7	23.4	19.43
1967	175.221	9.0	8.7	14.4	17.03
1968	197.262	11.5	7.7	12.4	12.34
1969	216,927	12.0	7.4	9.6	11.77
1970	240,204	8.0	6.1	9.3	10.55
1971	273,678	10.4	4.5	7.5	8.19
1972	N.A.	9.0	2.5	N.A.	10.39
1973	312,402	7.4	2.3	N.A.	8.44
1974	340,396	6.3	N.A.	N.A.	8.66
1975	368,236	6.3	N.A.	N.A.	N.A.

N.A.=Not available

Source : Statistical Year Books, Bureau of Economics and Statistics, Government of Karnataka, Bangalore ; "Employment Exchanges in Mysore Fact Book" Directorate of Evaluation and Manpower, Bangalore 1966 ; Statistical Abstract of Andhra Pradesh, Bureau of Economics and Statistics' Government of Andhra Pradesh, Hyderabad, 1956 to 1959, 1968 to 1972 : "Tamil Nadu An Economic Appraisal" 1975, Madras, "Kerala, An Economic Review" 1959, 1965, 1974. Bureau of Economics and Statistics, Government of Kerala, Trivandrum.

this State is much less than what has been observed in Kerala. But as in Kerala here too the percentage placements registered a noticeable decline. In Tamil Nadu the highest percentage of 20.84 was observed in 1965 and during the same year Andhra Pradesh too reported the highest percentage of placements, 28.5 per cent. It is difficult to say whether the higher percentage of placements in Tamil Nadu and Andhra Pradesh compared to Karnataka and Kerala in the middle of the 1960s implies that the performance of the Employment Exchanges in the two last mentioned states was poor in comparison to that of their counterparts in the other two southern states of India or whether the difference was actually due to differences in employment opportunities.

A study of Employment Exchange data shows that in 1961 about 18 per cent of the total placements was cornered by the Bangalore Employment Exchange. The one at Bhadravathi accounted for 11 per cent in 1961 and 7 per cent in 1965.[9] In spite of the rapid increase in the number of public enterprises, institutions and offices in Bangalore City, the Employment Exchange here has not been able to improve its percentage of placements to the number of registrants. The imbalance in placements, both areawise and sexwise, appears to be a normal feature in Karnataka. The sexwise data reveal that with regard to registrations and also placements the femles are very much outnumbered by males. The position becomes clear from a perusal of Table 2, which requires no explanation.[11]

The Employment Exchange data relate mainly to the educated and comparatively better-informed sections of the population. The number of registrants on any particular date, therefore, represents only a portion of the "unemployed". Registration in Employment Exchanges by job seekers is not compulsory and similarly there is no binding on the part of the employers and institutions to notify all the vacancies to Employment Exchanges and recruit men and women therefrom. Most of the industrial establishments and institutions recruit persons directly. In 1957, the average number of employers utilising the services of Employment Exchanges was 151. This number increased to 226 in 1958 and to 296 in 1959.

Obviously the non Government establishments have not shown much interest in making use of the Employment Exchange in Karnataka. From 1961 onwarda, under the Compulsory Notification of Vacancies Act 1959, all the establishments having more than 25 employees are required to notify the vacancies to the Employment Exchange and obtain the services of the latter for recruitment. This Act, however does not seem to have been enforced strictly all over the State and the Employment Exchange does not have any statutory authority to assess the number of vacancies likely to arise in any establishment and cross-check the same with those voluntarily brought to its notice by the employer. Lack of proper understanding and of co-operation between the employers and the Employment Exchange authorities are the real problems for which urgent solutions are to be found, if the Government intends to provide quick relief to the ever increasing number of unemployed. Much time and labour are spent on what one may easily describe as avoidable correspondence and procedures.

Table 2 : Statement showing sexwise registrations and placements in Employment Exchanges of Karnataka during the III Plan Period (1961-1965)

Year	Sex	Registrations	Placements	Percentage of placements	Percentage of		Sexwise percentage of	
					Registration to the total	Placements to the total	Registrations	Placements
1961	M	1,26,302	19,636	15	18	21	90	91
	W	14,594	1,835	12	16	15	10	9
1962	M	1,46,953	22,541	15	21	24	89	91
	W	18,291	2,112	12	20	18	11	9
1963	M	1,49012	19,374	13	21	20	89	88
	W	18,371	2,630	14	20	22	11	12
1964	M	1,35,617	15,562	11	19	16	88	86
	W	18,692	2,580	14	20	22	12	14
1965	M	1,52,311	18,065	12	21	19	87	87
	W	22,262	2,643	12	24	23	13	13
Total 1961-1965	M	7,10,195	95,178	13	100	100	89	89
	W	92,210	11,800	13	100	100	11	11

M: Men W: Women

Source : Employment Exchanges in Mysore—Fact Book, Directorate of Evaluation and Manpower, Government of Mysore, Bangalore, 1968, P. 4.

Among the registrants a large number belong to the category of matriculates most of whom do not possess any skill or training. For instance, of the 310,104 persons in the live registers at the beginning of 1974 as many as 265,065 persons belonged to such category.[12]

The enactment of the Apprentices Act of 1971 has been of some help in reducing the unmber of unskilled matriculates in the employment market. The provisions of this Act require every industrial establishment to provide a course of basic practical training

Table 3 : Industrial establishments and institutions recruiting through the Employment Exchanges

Type of establishment	No. of vacancies filled during the year 1957	1958	1959
1. Central Government	1,633	1,656	1,537
2. State Government	2,391	4,571	7,966
3. Quasi Government and Local Bodies	541	225	308
4. Non Government establishments	100	110	142

Source : Quarterly Bulletin of Statistics, Bureau of Economics and Statistics, Government of Mysore, Bangalore, 1959, pp. 46-47.

specified number of apprentices in specific trades depending upon its own size and nature of goods manufactured. In 1963, the apprenticeship training scheme started with 14 trades only and by 1971 it covered as many as 61 including specialized fields such as chemicals, food processing and catering, printing and commercial art, engineering etc.[13] However, there is apparently still much to be done in this field.

Irregularities in Employment Exchanges

It is generally alleged by the common people that the services rendered by the Employment Exchanges in Karnataka suffer from mismanagement, favouritism and other irregularities in the matter of registrations, priorities and placements. The politicians and administrative officers of the Government and public sector industries are the ones which wield considerable influence and, of course, corruption is also said to be rampant.[14]

A study on the effectiveness of Employment Exchanges conducted by the Indian Institute of Public Administration reveals that "the unemployed relied on other source of information and help than the Employment Exchanges" and that, while most of the State Governments want appointments to private and public sector organisations to be routed through Employment Exchanges because of the poor functioning of the Employment Exchanges, these occupied the lowest position among sources for information. The study which took into account 3 major industries of textiles, chemicals and engineering found the major sources of job information to be 'relatives and friends", newspapers and direct approach. The education level of the workers and their job information also revealed an interesting correlation. While for workers who have studied up to the school level, the main source appeared to be "relatives and friends", those with graduation and above relied largely upon "newspapers" as a source. Employment Exchanges figure very low in all cases. As regards the recruitment pattern of establishments, it was again found that Employment Exchanges were resorted to a much lesser extent compared to advertisements, direct method and employer's reference.[15]

Another odd factor which has recently been influencing the Employment Exchanges is what is called the "sons of the soil" theory. Each Linguistic State is deemed to belong to those who speak that particular language and have been residing within its limits for several decades. Those coming from other States are branded as outsiders and therefore not to be given employment. In spite of the long term implications of such a parochial attitude, the Union Government does not seem to have taken the matter with any seriousness On the contrary, in a written reply the Union Deputy Minister for Home Affairs states as follows :

> The National Integration Council had recommended in 1968 that, in order to provide adequate employment opportunities to injustice, where qualified local people are available from amongst the people from the State, they should be given a major share of employment and employers should be requested to give effect to this objective as a matter of policy.[16]

The constitutional validity of such a policy in the Indian Republic is rather doubtful especially regarding services rendered by Government Department. But the effect of such an executive measure is already felt. During the house survey, this author was told by a lady graduate from Kerala, but residing in Bangalore, how she was not allowed to get her name registered in the local Employment Exchange even though she explained to the authorities her economic plight and her need for a job.[17]

In summing up, it may be said that there is an urgent need to improve the working of the Employment Exchanges in Karnataka and to extend this facility to a wider group of the labour force without distinctions such as one's qualification, place of origin, language spoken at home etc,

NOTES

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11. "Employment Exchange in Mysore—Fact Book", 1968, p. 4.
12. Figures supplied to the author during March, 1974, by 'The Directorate of Employment and Training", Bangalore.
13. The Apprentice Act, Government Press, Bangalore, 1971, pp. 9-11.
14. "In Andhra Pradesh a father is undertaking fast unto death to secure jobs for his sons and a daughter. In a leaflet the father, Kotdiah, said that he had failed despite his ceaseless efforts to secure jobs to his children who are science graduates. It is reported from Calicut in Kerala that 8 candidates had applied for a single vacancy of attender in a local school and that since all of them were prepared to pay it bribe at the rate of Rs. 6,000/- one of them was actually chosen by lot. This episode speaks volumes of the sordid role that corruption has been playing at all levels of public activities and at the expense of the weak and the desperate. It is not that greasing-itching palms is peculiar to any country of any age. The worry of the right thinking men and women is that this evil force is breeding social deprivity of a sort that will not only tolerate but will intensify, extend and perpetuate a universal spoils system. Some educated unemployed in Kunnathura near Calicut have proposed a scheme under which, instead of bribing their way into jobs, they will pool what will otherwise have been spent on bribes to raise sufficient equity capital for starting an industry with the requisite matching assistance from the Government, which can employ them and their friends." The Hindu, Bangalore, 8th January, 1974.
15. Indian Express, Bangalore, 16th April, 1974.
16. Indian Express, Bangalore, 16th May, 1976.
17. Personal Interview at Bangalore, 15th December, 1975.

An Approach to the Process of Financial Institutions' Involvement in the Micro-level Planning

B. K. Mukhopadhyay*

Micro-level planning essentially calls for an integrated 'area approach' in which the banks and other financial institutions have pronounced participations. The question naturally arises how the participation would take place in an effective manner so as to ensure overall regional development. The very first point is the fixation of the 'action area'. Successful credit programme cannot be admimistered just anywhere. The areas are to be carefully selected and the bank has to satisfy itself the conditions for successful implementation of the present or future programme within a reasonable period of time. Area of operation of an operating bank office comprises the geographical area(s) from which the bulk of the business is derived.

A detailed socio-economic survey helps understand the area of operation for purposes of operational planning. Occupational pattern, banking habits, state of demand for and supply of banking services, a general state of customers etc, are some of the information that help prepare a 'composite index' meant for a meaningful 'regionalisation'. Delineation of sub-regions reflects the level of development attained by them. This is not just cutting the map into many, but a systematic classification of the entire region. Identification of the 'growth centres' becomes the next assignment. 'Growth foci' with their regional spreads, come out to be the kingpin in this process of regional development. Different sub-regions, thus reached, and the identification of growth centres would enable the fixation functionally, spatially and temporarily for these sub-regions, according to their respective peculiarities, formulation of bankable area-development schemes comes up as a follow up action. Schemes for agricultural and allied activties, small-scale and cottage industries, land use pattern give rise to a series of area development schemes, while optimising the utilisation of available human and physical resources. Other things which are intricately related to these include supply of practical know-how and expertise for ensuring the requisite degree of extension effort so as to educate and motivate the small farmers, artisans, small entrepreneurs, small businessmen, self employed for the new schemes and finally connecting the 'market centres' with the producing zones.

---

* Calcutta.

Fixation of zones of efficient operation is another step in the plan-formulation part of a regional banking plan. For this the area would comprise the town of location itself (and that too to the localities in which the wholesale shops/business houses are housed). Regarding flow of deposits, the area would tend to comprise town (i.e. the point of organisation) plus villages (within the accessible radius). Area of operation would remain as conglomerate concept. The intensity of coverage need not be uniform and will vary over the coverage area with respect to given activity. Intensity becomes a variable in the process of decision making in regard to marketing thrust. This 'zoning' also calls for broad area demarcation between institiutions with the knowledge and concurrence of the controlling authority (e g. municipal wards, blocks of houses etc.), setting of objectve, alongwith the targets fixed on the basis of priorities assigned, calls for achieving the same. This can be reached either (i) by extending the size of geographical area covered, keeping the intensity of coverage as a parameter, or (ii) increasing the intensity of coverage keeping the geographical area as a parameter, or (iii) a combination of 'spread' and 'depth'. 'Spread' has the reference to the geographical area covered, while the 'depth' refers to the intensity of coverage in a given geographical area.

Collaboration with other agencies operating at the micro-level is the crucial thing viewed from the plan-implementation point. Schemes of Govt. departments, projects envisaged by other developmental agencies are to be taken into consideration while formulating the regional banking plan Supporting schemes based on the forward and backward linkages of these projects come under way, naturally.

Amalgamation of a number of sub-plans, namely, credit plan, training plan, education plan, health plan and other plans on community facilities, give way to efficient implementation of micro-level plan.

Constant monitoring of the schemes for efficient administration of credit that would inter-alia consist of close supervision, follow up and the timeliness in making the credit available, finally paves the way for overall development. 'Evaluation' is a dominant part in any regional development plan. Continuous take-in information about existing and potential clientele and sensing changes affecting business so as to fight back adversities consist of a vital segment in the on going process.

Other important factors that come under way while formulating such a plan include, among others, estimation of credit need, extension of credit to each borrower according to the estimated need in the regional and sub-regional context, the estimation of deposit growth and deployment of funds with respect to regional, sectoral and among major borrowers (on purposes). Household savings (in the form of financial assets), age profile of bank branches to study their influence on some key variables in the economy (such as demand for money, savings) etc. analysis may help strengthen the plan formulation part.

Social cost-benefit analysis for the region in question with reference to different activities could actively help in selection the right activities in right places. Credit programmes entail the incurring of certain costs and in a successful programme benefits should exceed cost. Administrative costs, supervision cost, cost of deployed funds, defaults and other social costs, consist of the cost part, while interest yield, increase in productivity etc. come in the benefit side.

Area-approach essentially calls for a proper attention to the factor, namely, 'competition'. It is related to area of operation and does not tend to delimit the area of operation itself. Assessment is required to see whether there occurs any material overlap. 'Core' area for every given branch is not fixed but a variable area—the area of operation may shrink in its geographical boundaries as bank branches multiply. Uncovered area, from period to perriod, can be increased by taking in uncovered areas from the branch itself or through the provision of additional modes. Nodal points, in the shape of sub-offices, extension counters etc. generate around them—subject to their own capabilities—new areas of operation for the activities handled. These areas, which need not be contiguous to the operation area of the parent unit, get added to the latter to enrich the conglomeration. The 'interest' in the area already covered would be boosted as well as would bring in some fresh territory under coverage. The 'fringe' areas would be added to the action area through this spread. Depending upon capabilities and strategies, the operational area is capable of being widely varied. Therefore, each time the business plans are drawn up, a clear picture of the area(s)—in both the dimensions of spread and the debt—has to be kept in view and data relevant to the field, so focused upon, are to be made use of. In the process, an understanding will also emerge of what part(s) of the feasible area is/are being consciously kept out, for inadquate resouces or on account of other priorities.

Source-wise credit availability and their deployment according to functions over preceding years could also throw light in the process of identifiction of centres for future branch expansion.

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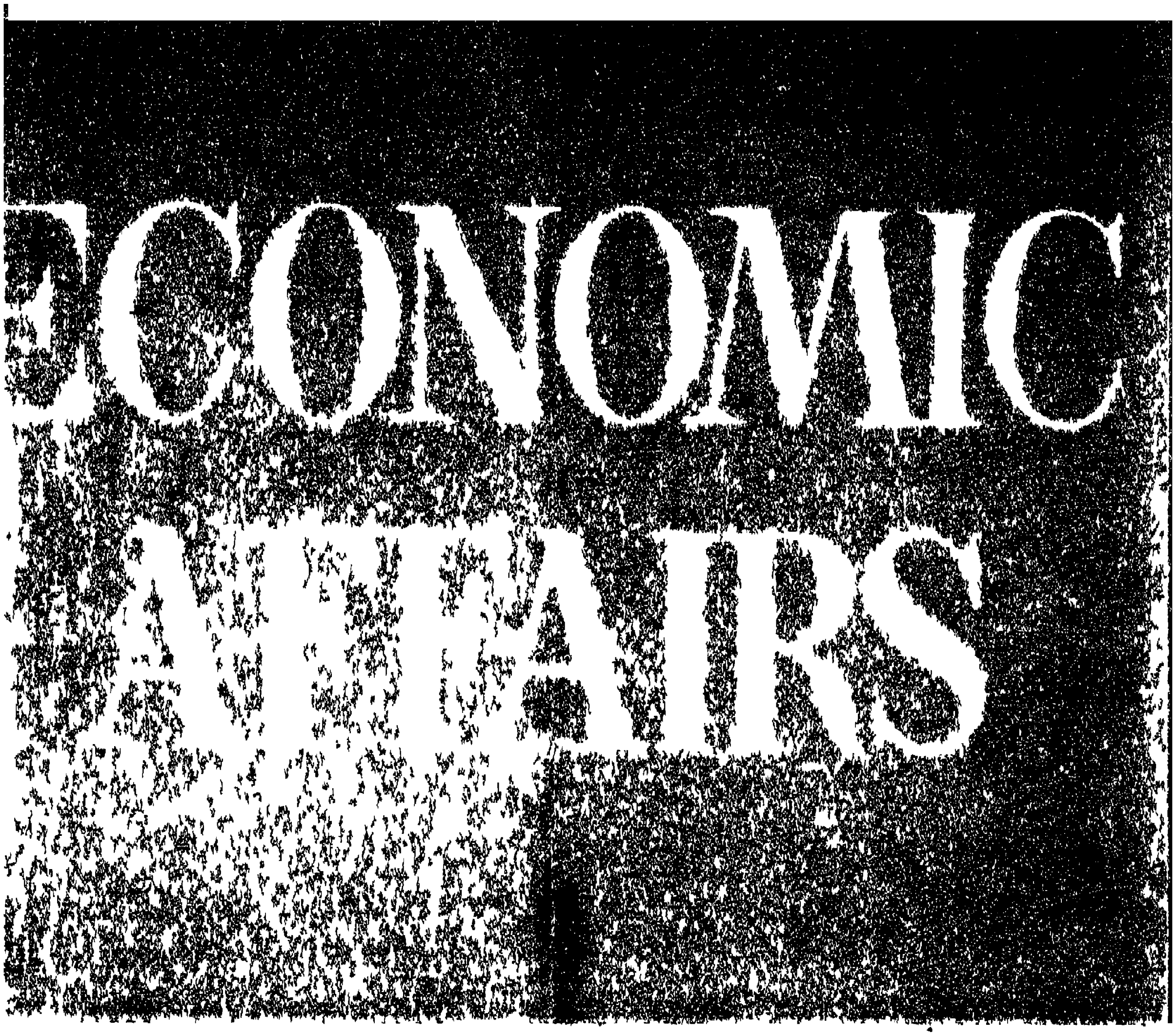

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Economic Urgency to People's Emergency

Simple living and high thinking way of life in India has been successfully replaced by pretentious living and tall talkings. The hotchpotch Janata's utopian sixth plan with a load of Rs. 80,000 crores has been challenged by the hot-gospeller Indira Congress with a plan-brief worth reportedly of Rs 90,000 crores to Rs. 100,000 crores that will propel to remove the country's poverty and unemployment, control population reproduction, assure public health care and improve infrastructural facilities like power and irrigation This customary Plan Manifesto with a brilliant record of 'plan holiday', 'cut to core' and 'annual floats' this time is supported by an overzealous industrial policy directed to woo the private sector ('socialism' has already been hanged, 'mixed economy' settled permanently, and the past sin of restricting the welfare economy of private sector openly acknowledged). The policy underlines that the Government has decided to pursue a goal of a vibrant, self-reliant and modern economy in which all sectors and segments have a positive part to play.

The normal reversal policy as the policy of setting the wheel back also finds its place in the industrial policy. The policy states that it will be the endeavour to reverse the trends of the past three years towards creating artificial divisions between small and large industries as the country needs integrated industrial development. A new concept has evolved out of reversion, namely, 'economic federalism' that aims to set up a few nucleus plants in each district, identified as industrially backward, to generate as many ancillaries and small and cottage units as possible.

As tall talks and the pretentious living are correlated, we hope, on the strength of growing tall talks, the pretentious living will reassert itself more forcibly now.

There are other factors too. The regional political performances, we mean. The performers are four in all. Two of them are communist Left (variety not known) sitting on the governments of Tripura and

West Bengal. The third one is on Kerala, which is a Right-Left opportunist combination The fourth one is on Tamil Nadu, a diffused separatist. The Tripura Left has thrown the state almost to genocide by its overplay with the tribal people to divide the people into 'people's enemy' and the people's ally. West Bengal's economy has simply been ruind by mismanagement, false promises, partisan rule, political slogans, political dependence on centre's economic assistances, and by playing with the half-a-century old communist strategy and tacts of alienation of 'people's enemy', and grabbing some lands to form "free region" within the country. Kerala counts only the split moments. Tamil Nadu lives on promises which have no reality and would be waiting for a confrontation between myths and reality, if election promises have any value.

Still further, the entire north-east region is sitting upon volcano. There the people are agitating on 'foreign national' issue to issue of the right to opt out from India for ethnic grounds

Prices are soaring up almost daily. Money is poured down to feed the price rise. Unemployment is rising, employed are saddened, law and order is a point, foreign reserves are to be cashed to ease both the economic and the social tensions. The traders are joyous, would be still more joyful if there are more strikes, lock-outs, bonuses and dearness allowances. They glance smilingly at the leaders of political parties who are mummed by election finance and conflicting unity and ideologies. Millions are outside this chess—the people, the helpless people.

Thus a severe situation of economic urgency has arisen. But the Emergency authors are conspicuously silent ? Why ? Is it still the conditions ripe further or that the conditions will automatically wash out all the political parties for a new creation ? Whatever one may guess, inaction today will be the People's Emergency of tomorrow. The authors of 1976 Emergency will be happy, the opponents will find their jobs lost, the people will find pleasure of discipline in it, and the super powers will try to nest in the centralized power. But point is : Does the future of India lie in People's Emergency ?

Review

'No, Sir', P G. Mavalankar, Sannishtha Prakashan, Ahmedabad-6, Price Rs. 45.00.

The book is a collection of twentyfour speeches of Mr. P. G. Mavalankar in Lok Sabha between July 21, 1975 and November 5, 1976 during the days of internal Emergency in India. Mr. Mavalankar was a no-party man, an independent M.P., i e he bore no mortgaged conscience or tight lips. His free will dictated him to oppose the Emergency tooth and nail with hard speeches which were "the spontaneous expressions of the agitated soul who was enabled by God's Grace to stand up and speak". He was amongst the few M.Ps. who had the saffron spirit to oppose pension for M.Ps. and perhaps the lone to swear not to take pension, which might be the result of his feelings that the M.Ps. were the costliest unemployed in the society. Equally logical was his speech on extension of the term of Lok Sabha as to him the members had no right, no authority, no sanction to extend their own term by deciding it themselves. Unfortunately Mr. Mavalankar could not maintain consistency in his conduct. "I am not in the habit of making personal attacks or individual criticisms. I have never in the past referred to "*Maruti*" in my speeches". But he enjoyed when his strategy "proved both telling and fascinating, as on each of the four Divisions we asked for ... Mrs. Gandhi disappeared from the House at the time when the Lok Sabha divided !" as she was bound by Supreme Court judgement to participate but not to vote in the proceedings of the Houses.

But he seems unconvincing on many other points to the 'opposition' to both who are in position and in opposition resting in bulwark of finance capital for the full-term of election. He had rightly reminded the fellow M.Ps. that it was a 'taking shop' while lamenting that it was going to be a 'closed shop' for them. The 'taking shop' was to him a place for opposition 'to oppose and oppose and oppose' and also 'to oppose and propose alternatives and then sit down, but not obstruct'.

These classical practices of Parliamentary democracy were keenly observed with awe, anger and amusement by Hitler, Mussolini, Lenin, Stalin, and Mao who have made history by running over it.

Point is what the 'people' (not in divisive non-nationalist sense) will lose if the 'shop' is 'closed' ? Have they gained anything save how to talk talls, oppose anything relevant, propose anything irrelevant and obstruct anything good or bad in the bulwark or on the streets, in fields and factories as the avowed policy of the ideologically non-conformists ? Is it not the fact that more and more talks are directly correlated to more and more poeple's getting down the poverty line ? What is their real urge : talk or action ? An institution that cannot act must be replaced by a suitable one that can act, if necessary using some device of silencer.

But Emergency that one had found in India was no answer to it. For it was the counterproduct of "total revolutionaries-in-action" radiant by the strong will to develop dynesty rule. Equally, more 'talks' are no answer to it as they are more pollutive than anything else. The result is one could not replace the other. Both are rejects by now ; the re-emergence of Mrs Gandhi confirms it. Now what else remains to be rejected is the talking shop. But possibly it cannot be so long as it remains the bulwark of finance capital. Then can the finance capital be confined to its rightful place ? If it can be then how ? This will perhaps be the readers' common reflection by going through the well-intent speeches of Mr. Mavalankar.

A Text Book of Value, Distribution and Trade, J. S. Railkar, Sultan Chand & Sons, New Delhi 110002, Price Rs. 20 00.

This book, according to the author, is an experiment in synthesising the value, distribution and growth. The primary interest is however to fulfil the requirement of undergraduate students. There are sixteen chapters dwelling with the theory of demand, theory of production, theory of distribution and the economic growth in the perspective of classical approach. In the growth theory his special field of study is Ricardo, Marx and Harrod and Domar. The study ends in the discussion of economics of poverty. All the topics have the touch of lucidity and mastery. But what lacks in the study is the much sought of 'synthesis' in one place of the three interconnected elements under reference.

International Marketing Management: An Indian Perspective, R. L. Varshney and B. Bhattacharyya, Sultan Chand & Sons, New Delhi 110002, Price Rs. 25.00.

The growing importance of international trade with the growing economic and political dimension of multinational corporations and also of the third world reasonably calls for an indepth study of both the theory and the practice of international marketing. Commendable books in this field of study are too few. This book, rich in contents and coverage, will help meet the want of both students and persons-in-trade. The coverage includes foundation of international trade, planning and pricing of exports, and the trend of India's foreign trade.

Economic Environment of Business, M. Adhikary, Sultan Chand & Sons, New Delhi 2, Price Rs. 25.00.

"The main purpose of this book", says the author, "is to build up a few micro-economic concepts and theories into an *analytical framework* with reference to which one can attempt a meaningful evaluation of the economic environment of business in India". These ends lead him to explain concisely some basic macro concepts, both in physical and in monetary aspects, and the genesis of economic plannings and growth. The analyses of the concepts have brought the readers to understand clearly how a modern economy functions, its growth ambitions and the constraints thereto. Enriched by this knowledge, the author expects, the readers will be able to understand the anatomy of the economy of India and the character of her urge for development. The author has also discussed the Janata sponsored Sixth Five Year Plan which gave a twist to hitherto accepted basis of India's five year plans.

The book is largely intended for students who will be benefited by modern economic concepts and monetary theories and their empiricism in Indian context.

Productivity of Small Farms

The Farm Management Studies in India of the 1950s, covering about 3000 farms in six states, found that the larger the farm, the smaller is output per acre. Nor has the green revolution—high-yielding varieties of seed—changed this conclusion. Although the productivity gap between large and small farms tended of narrow as the green revolution spread, it remained significant—even after controlling for differences in land quality and irrigation. The proportion of land under high-yielding varieties did not vary by farm size. Tests relating capital and labour use to farm size showed that as farms became larger, they used proportionately less capital and labour—and particularly the latter, which costs less on small farms making use of family labour than on large farms relying mainly on hired labour.

In Brazil the World Bank and SUDENE, the official regional development authority, carried out a detailed study of 8000 farms in the poor north-eastern region in late 1973 and early 1974. It revealed that the intensity with which land and labour were used declined sharply and consistently as farm sized increased. Depending on the subregion, small farms applied 5 to 22 times as much labour per hectare as large farms, although the proportion of high or medium-yielding soils did not vary significantly with the size of the farm. Small farms tended to employ more labour than profit maximization would warrant, probably in part because family members have difficulty in obtaining employment elsewhere, while large farms employed less.

Such studies suggest that redistribution of land in large farms into smaller ones in many cases would increase output and employment significantly subject to where literacy rates are low among small farmers. In that case middle-size farms tend to be quicker to adopt innovations, and after a certain point fragmentation inhibits productivity growth, and significant and is lost through field boundaries. Where labour is in relatively short supply, and timely cultivation and harvesting are critical to increasing yields, large mechanized farms may be economically rational.*

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* World Bank.

Estimating Undiscovered Oil Resources: An Engineering Approach

Noel D. Uri*

Accurate information about a country's energy resources is essential to the formulation of a rational energy policy. It is not possible to adequately plan for the future without a good data base and assiduously structured analytical tools. In delineating an energy strategy, one of the fundamental data requirements is an assessment of the nature and extent of energy resources for development. In this regard, a number of different approaches exist for evaluating the potential size of crude petroleum resources (see, e.g. Schanz [8]. One is the geological approach which attempts to directly estimate the physical quantity of crude petroleum remaining to be discovered and poduced without providing any indication of the production profile. A second approach is the econometric ; whereby structural models are used to infer what future supply can be attained as producers to various economic incentives. The third and final approach typically used in estimating crude petroleum resources is the engineeing approach. In this instance, historical information on discoveries and production are used to estimate the quantity of recoverable oil remaining in the ground. It is this approach that is the subject of what follows.

Estimating Undiscovered Reserved

Like all depletable natural resources, crude petroleum production is distinctive in that the quantity of total reserves falls as production occurs. Additionally, after some point, the rate of attainable production declines in the absence of new discoveries and technogical innovations. One methodology that has been extensively used in projections of future production giving these characteristics is the engineering approach. This typically involves the assumption of a symmetric distribution with an increasing trend, a maximum level of production and a fill to find depletion. Given this, it is possible to predict when the peak level of production will take place, the quantity involved at this peak and the general temporal production configuration for an appropriate functional specification. Unequivocally, the most popular specification has been the logistic curve since it possesses the requisite properties enumerated previously. Further, it has the property that it can indicate maximum recoverable crude petroleum resources.

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While several individuals have adapted this approach, the person receiving the greatest amount of attention has been M. K. Hubbert with his focus on estimating maximum recoverable resources and the peak production level and period for the United States (see, Hubbert [5], [6]). While Hubbert used data on cumulative proved discoveries, cumulatives production and proved reserves in the estimation process, a problem exists in his estimation. In a subsequent section, this problem will be highighted and a revised estimate provided for the United States. Before this is accomplished, however, a discussion of the theoretical aspects of the approach is warranted. It is to this we now turn.

An Approach to Estimating Maximum Recoverable Reserves

From the record of annual production, dQp/dt, the cumulative production, Qp, can be obtained. Then from the value of cumulative production and proved reserves, Qr, for any given year, the cumulative proved discoveries, Qd, may be defined by

$$(1) \quad Qd = Qp + Qr.$$

That is, the oil whose discovery may be said to have been proved by any given year is the sum of the oil already produced plus the remaining proved reserves.

During the complete cycle of production, the curve of the rate of productions dQp/dt, begins at zero and then after passing one or more maximum, ultimately returns to zero. Coincidently, the cumulative production curve begins at zero and increases monotonically with time until finally levels off asymptotically to the ultimate quantity Q^* indicating total recoverable resources.

For a small area, the production curve for the complete cycle may involve more than one major cycle. However, in a large geographic area like a country, the production rate curve is the composite of the production from all its components, both old and new. In such an instance, production irregularities at the micro level tend to cancel out so that for such an area the production history shows every promise of giving a comparatively smooth single-cycle curve (Grunfeld and Griliches [4]).

There is a close resemblance between the cumulative discovery curve and the cumulative production curve except that in the mid-range the discovery curve precedes that of production by a nearly constant time interval Δt. Because of the similarity between the curves, the approximate preview of the behavior of the production curve by the lead time interval Δt. That is, one may determine approximately how much oil will be produced Δt years hence by examining what the discovery curve is doing currently.

A third curve, that of the rate of increase of proved reserves dQr/dt, is also of interest. There is a positive period representing the interval during which proved reserves are increasing and a negative period during which they are decreasing. The point at which the rate of increase is equal to zero coincides with the intersection between the rate-of-discovery and the rate of-production curves. This can be seen from equation (1) by noting that

$$Qr=Qd-Qp,$$

the derivatives of which are

$$(2) \qquad dQr/dt = dQd/dt-dQp/dt.$$

When proved reserves reach their maximum, the rate of increase of proved reserves is zero. That is,

$$(3) \qquad dQr/dt = 0 \quad \text{and} \quad dQp/dt = dQd/dt$$

The curves in variation of rates of production, of proved discovery, and of rate of increase of proved reserves give little information about the magnitude of the complete cycle until the maximum value of the rate of increase of the proved reserves is reached. After that, the three curves taken together give an increasingly accurate estimate of the degree of advancement reached over the complete cycle at any given time. In particular, after the peak in the rate of discoveries has been reached, the peak in proved reserves may be expected to occur at about $\Delta t/2$, and that in the rate of production at about Δt later.

In order to obtain analytical derivatives of the three curves, it is necessary to fit then to explicit functional relations. As noted previously, the logistic curve has been used effectively by others The specific form of this equation is :

$$(4) \quad Y=k/(1+ae^{-b(t-to)})$$

where Y denotes the quantity,

t-to denotes the time after some reference period to,

e denotes the base of Napierian logarithms, and

k, a, and b are constants to be estimated.

Note that as time increases indefinitely (i.e., without limit), the quantity y approaches the value k asymptotically.

Hence, the curve of y as a function of time begins at zero, rises initially exponentially, then slows down in its growth rate, passes its inflection point, and eventually levels off asymptotically to an ultimate maximum value k.

Translating this equation into cumulative discoveries or cumulative production, one may write

$$(5)\quad Q=Q^*/(\,1+ae^{-b\,(t-to)}\,)$$

in which the constants Q^*, a, and b are emprically determined based upon time series of cumulative production and cumulative proved discoveries.

Estimation Technique

When Hubbert presented his original estimates (Hubbert [5]) for the United States as well as when the revisions were published (Hubbert [6]), no mention was ever made of the estimating technique. This, of course, has led to the questioning of his estimates (Pensak [7]). Thus, for example, for Q^*, Hubbert in both studies assumed the value of one hundred and seventy billion barrels based apparently upon subjective factors entirely. This is not acceptable. Techniques exist for estimating such non linear systems as described by equation (5). In the current analysis, maximum likelihood estimation shall be used.

Second, there is the supposition that Q^* for both cumulative production and cumulative proved discoveries are the same. (Note that implicit in this is that the notion of reserves, being discussed includes only recoverable reserves). Since maximum likelihood estimates are obtained, it is possible to test this. Denoting the determinants of the unrestricted and restricted estimates of the disturbance covariance matrix by $|wu|$ and $|wr|$ when equation (5) is estimated for the two series, the likelihood ratio can be written :

$$(6)\quad \lambda=(\,|wr|\,/\,|wu|\,)^{-n/2}$$

when n is the number of observations. The hypothesis is tested using the fact that $-2 \log e\ \lambda$ has a chi-squared distribution with degrees of freedom equals to the number of independent restrictions (one) being imposed (Goldfeld and Quandt [2]).

Further, there is the question of the robustness of the parameter estimates. If additional observations give significantly different (in the statistical sense) coeffiocent estimates, then the question of model adequacy arises. This needs to be investigated.

Finally, to fully evaluate the efficacy of this engineering approach, it should be applied to, in addition to the United States, a developing country. The country selected is Nigeria. Consequently, the following section will look at resource estimates in the United States and the subsequent section will look at these estimates for Nigeria.

Empirical Results for the United States

The data used in the estimation for the United States were obtained from the AGA, et. al. [1]. This is the same source used by Hubbert. Data of cumulative production are available back to 1920 but data or cumulative proved discoveries begin in 1945. Therefore, since the equations are being estimated coincidently, the years 1945 through 1977 serve as the sample period.

The models for cumulative production and cumulative proved discoveries were estimated in the manner previously discussed. For both series (the series through 1961, and the series through 1977), the null hypothesis that Q* is equal for cumulative production and for cumulative proved reserves could not be rejected at the 95 per cent level. Accordingly, the results presented in Table 1 impose this restriction. (Note that, to be consistent with Hubbert, t_0 was taken to be 1900), All of the coefficient estimates over the two periods are significantly different from zero at the 95 percent level. Further, the Durbin Watson statistics is inconclusive in both periods.

One of the interesting results is that the coefficient estimates are significantly different over the two periods. Part of the difference can be attributable to the nature of the estimation technique. Maximum likelihood estimation is basically a large sample approach to statistical analysis. As such one would like to have in excess of forty degrees of freedom. With the models estimated through 1961 there are only 29 degrees of freedom (2 times 17) (the number of years) minus five [the number of coefficients estimated]. With the model estimated through 1977, there are 63 degrees of freedom. Other potential problems will be discussed below.

What do the results indicate ? Focusing on just the estimation for the longer period, the estimate of Q*, the maximum cumulative discoveries and maximum cumulative production, is 198 billion barrels. This is somewhat larger than the value assumed by Hubbert of 170 billion barrels.

The peak in the rate of proved reserves, when smoothed to eliminate annual oscillations, occurred around 1962. For the rate of production the results suggest that the peak would occur in about 1971. In fact, peak production occurred in 1970 at a rate of 3.328 billion of barrels. Subsequent years have failed to reach this level. (Production in 1971 was at a level of 3.298 billion barrels.) Finally, the results indicate that the peak in the rate of proved discoveries occurred in the late 1950's.

These results correctly predict peak production (within an acceptable limit), and the peak in the rate of proved reserves as well as the peak in the rate of proved discoveries. Given this, considerable credence should be given to the estimate of an ultimately recoverable 198 billion barrels of petroleum in the United States. This is somewhat lower than what the coventional wisdom indicates, which ranges to a high of 458 billion barrels (see Schanz [8]) but it is based on a more objective approach than that of Hubbert.

Empirical Results for Nigeria

In contrast to the United States, which has been producing crude petroleum since the middle of the nineteenth century, the first commercial accumulation of oil was discovered in Nigeria only in 1955 with appreciable production beginning in 1958 (Tiratsoo [9]). Further, whereas the United States is now witnessing an annual decrease in its level of production, Nigeria has yet to reach its maximum output level.

The data used in the estimation for Nigeria were obtained from the American Petroleum Institute [2]. Data on both cumulative production and on cumulative proved discoveries are available from 1958 to 1977.

The models were estimated in the manner previously delineated. The null hypothesis that Q* is equal for cumulative production and cumulative proved reserves could not be rejected at the 95 per cent level. Consequently, the results presented in Table 2 impose this restriction. The value of t_0 was taken to be, arbitrarily, 1936. (This choice facilitated convergence by the estimation algorithm). See of the coefficients over the sample period are significantly different than zero at the 95 per cent level. Further, the Durbin-Watson statistics is inconclusive for both equations.

The results indicate that the maximum cumulative discoveries and maximum cumulative production is 19.4 billion barrels. This is approximately equal to the value reported by the American Gas Association [2].

The peak in proved discoveries, according to the estimates, occurred in 1968. It is expected that the rate of peak Nigerian production will occur in 1980.

A Cautionary Note

The logistic curve provides a particularly good fit to any historical series that is approaching or has already reached a plateau. This has been adequately demonstrated in the foregoing analysis. One must be cautioned, however, that to assume that the fitting of the curve to the several variations of a historical series in some way confirms validity of its use is not entirely warranted. Despite the vigor with which past behaviour has been examined and applied to the projection of the pattern of United States and Nigeria oil discovery and production, this does not necessarily indicate that the logistic curve is a more reliable predictor of the future than any other functional form that might have been chosen.

The use of mathematical formulas to project trends forward provides an aura of precision and objectivity. The process of fitting and projecting, however, is a more subjective process than it might appear. The choice of the type of curve to use predetermines to a certain extent what the future will look like. Then the analyst must exercise further judgement as to the time period to be used and how the curve is fit to the data. Judgments at this stage—at the point where the logistic curve specification was decided upon—are critical because the manner in which the final years are fit affects the expected decline in production.

Production history profiles provide for many a sense of correctness because they follow the classical pattern of mineral production. Yet they leave a number of questions unanswered. Is it proper to assume that the historical interrelations between the many factors that affect oil exploration and production will continue unchanged in future ? If production of oil has peaked, as in the case of the United States, has this *de facto* been induced by external institutional factors rather than by a limitation in the hydrocarbon endowment ? Might not technical ingenuity or the new frontiers of exploration once again produce a major surprise ?

There are no definitive answers to these questions. But for all oil producing countries, the debate is not whether there will be a decline, merely when and how.

Conclusion

The foregoing analysis has been directed at evaluating the earlier work of Hubbert in an effort to more objectively determine an estimate of total producible oil in the United States and in Nigeria. The results suggest that approximately 198 billion barrels are ultimately recoverable and producible in the United States, of which 113.8 billion barrels have been produced through the end of 1977. For Nigeria, 19.4 billion barrels should be the maximum level of production of which 6.1 billion barrels have been produced through 1977.

In accepting these estimates, caution must be exercised by realizing that the estimates are sensitive to a myriad of factors including the functional specification adopted, the estimating technique and the data.

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Table 1

Parameter Estimates for the United States (1)

	Q^*	a	b	R^2	D. W.(2)
I. 1961(3)					
a. Production	139.639	93.2349	0.07313	0.9999	1.50
	(2.412)	(1.4189)	(0.0073)		
b. Discoveries	139.639	97.8134	0.08977	0.9993	1.65
	(2.412)	(6.7425)	(0.0019)		
II. 1977(4)					
a. Production	198.033	81.7182	0.06119	0.9997	1.33
	(4.1586)	(1.4618)	(0.00068)		
b. Discoveries	198.033	32.3723	0.35629	0.9953	1.49
	(4.1586)	(2.0620)	(9.00155)		

(1) Standard errors of estimates in parentheses.

(2) Durbin-Watson statistics.

(3) Estimation period 1945 through 1961.

(4) Estimation period 1945 through I977.

Table 2

Parameter Estimates for Nigeria (1)

	Q^*	a	b	R^2	D.W. (2)
I. 1977(3)					
a. Production	19.4176	151212.0	0.27528	0.9902	1.50
	(0.4961)	(63700.5)	(0.01637)		
b. Discoveries	19.4167	48174.9	4.33250	0.9941	1.30
	(0.4961)	(24594.5)	(0.01746)		

(1), (2) See Table 1 Footnotes.

(3) Estimation period 1959 through 1977.

Role of Extension Work in the Development of Agriculture in West Bengal

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Agricultural extension work is no doubt an important agent in modernisation of agriculture by way of diffusion and adoption of new technology among the farmers. Attempt has been made in this paper as to see how far changes in area under crops, production, yield, fertilizer consumption, cropping intensity and irrigated area are associated with variability in agricultural extension staff in the districts of West Bengal. It is a generally accepted view that a district with a larger number of extension staff shows better performance in terms of its agricultural development in various aspects than from a district which has lesser number of extension staff. Aim of this paper is to see how far this has relevance in the existing extension service in the districts in general and in the Blocks in particular. Specifically, the objective is to see how far variability in extension staff in IADP, IAAP and Normal districts of West Bengal accounts for variability in various aspects of agricultural development.

Framework of the Study and Sources of Data

In West Bengal there are 15 districts of which one is IADP*¹ district, eight IAAP*¹ districts and remaining 6 Normal districts. Each category of district is distinctly different from one another in terms of its agricultural staffing pattern in district level, Block level as well as in village level because of the importance of the district concerned attached by its very nomenclature of category. For our purpose we have considered only the village level staff of agricultural extension service. In the village, persons engaged in communicating technological ideas on agricultural improvement to farmers are Village Level Workers (VLW). They have been treated as variable affecting the agricultural development of the districts. Of course, although Block Level Extension Officers and District Level Officers play an important role in the district, their effects have not been taken into consideration for simplification of the study.

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*¹ IADP=Intensive Agricultural District Programme
IAAP=Intensive Agricultural Area Programme.

Number of VLW in each Block depends upon the number of anchals in the Block. For each anchal there will usually be one VLW. On an average in each Block there are 10 VLWs. For IAAP districts 4 VLWs are posted in each Block in addition to the existing number of VLWs. For IADP district 10 additional VLWs are posted in each Block along with the existing number of VLWs. In short, number of VLWs operating per Block in each category of district follows like this : 20 VLWs per Block in IADP districts, 14 VLWs per Block in IAAP districts and 10 VLWs per Block in Normal districts.

Variations in growth rates of area, production and productivity of cereals in each district have been compared with the variability of number of VLWs per Block in IADP, IAAP and Normal districts and also with the size of net sown area per VLW per Block in each district. For finding out growth rates we have considered district-wise data of area, production and productivity of cereals for the years 1956-57, 1968-69, 1969-70, 1970-71, 1971-72, taking 1956-57 as base year. Linear growth rates have been computed with the following matheatical formula $Y=a+bx$, where Y=index number of area/production /productivity of each district, X=year, a=constant and b=linear growth rate. Standard error of linear growth rate was found out by the following formula.

$$S(b) = \sqrt{S^2YX/\Sigma X^2}$$

$$\text{where } S^2YX = \frac{\Sigma Y^2 - a\,\Sigma Y - b\,\Sigma XY}{n-2}$$

n=number of observations

Test of significance of growth rate was computed by $b/S(b)$ distributed over t_{n-1} d. f.

Then rank correlation was computed in order to determine how far the variability in the size of net sown area per VLW in each district is in agreement with variability in other types of growth indicators in the district. Rank correlation was computed taking size of net sown area per VLW per Block in the district on the one hand and linear growth rate of area, production and productivity of cereals, cropping intensity for the year 1971-72 fertilizer consumption for the year 1971-72 and percentage of irrigated area for the year 1971-72 separately on the other. Rank correlation was estimated separately for each variable and they were put to test of significance. The formula used to determine rank correlation was

$$r_{\text{rank}}=1-\frac{6\Sigma D^2}{N\left(N^2-1\right)}$$

Test of significance of r_r was computed by

$$t=\frac{r_r\sqrt{n-2}}{\sqrt{1-r_r^2}} \qquad \text{distributed over } t_{n-2} \text{ d. f.}$$

[Data available in "Economic Review"—1974-75, 1976-77, Govt. of West Bengal, "Fertilizer Statistics", Fertilizer Association of India—New Delhi, "Field Book" Indo-German Fertilizer Educational Project, West Bengal, "A new dimension in agricultural extension service", Govt. of West Bengal, are mainly relied on for the purpose of the study].

Results and discussion

Results of the study show that linear growth rates of acreage under cereals for some of the IAAP and Normal districts are greater than what has been observed in IADP districts. Again, growth rates in some of the Normal districts are higher than the rates observed in some of the IAAP districts. So, it is not in conformity with the general view that higher growth rate should be observed in IADP districts followed by IAAP and Normal districts. So, the variability in growth rate cannot be accounted for simply by nomenclature of IAAP, IADP and Normal districts alone. The size of net sown area per VLW per Block in each district is important to account for the variability in growth rate Relating to the size of net sown area per VLW per Block in each district with their growth rates for area under cereals, it is observed that districts with larger size of net sown area per VLW per Block are associated with higher rate of growth of acreage under cereals. Rank correlation between the size of net sown area per VLW per Block and linear growth rate of area under cereals reveals positive correlation i e. $r_r=0.565$, which is significant at 5% level (Table 1).

Districts like West Dinajpur, Murshidabad, Nadia, Hooghly, Howrah, Jalpaiguri experienced more fluctuations in acreage than other districts as exhibited by their high standard error of linear growth rate. This may be due to transfer of acreage under *Aus* to relatively profitable cash crop like jute in pre-kharif season in all the districts except Howrah. Growth rate of acreage is significant at 1% level for the districts of Burdwan, Birbhum and Darjeeling only. For Bankura, Malda, Coochbehar, West Dinajpur it is significant at 5%.

In case of growth rate for production of cereals, growth rates for some of the IAAP districts are greater than what has been observed in IADP district. Again, growth rates for some of Normal districts are greater than what has been observed in some of the IAAP districts. So, mere difference in number of VLW per Block in IADP, IAAP and Normal districts does not account for variability in growth rate of production. Here also the size of net sown area per VLW per Block in each district accounts for the variablity in growth rate. Rank correlation between net sown area per VLW per Block in the district and linear growth rate of production gives a positive correlation (r_r=0. 211) although r value is not significant. Higher standard errors of linear growth rates observed for Murshidabad, Howrah, Nadia and Birbhum indicated wider fluctuations in production in those districts during the years concerned. Growth rates of production are significant for Midnapore at 1% level and for Burdwan, West Dinajpur, Hooghly, Darjeeling, Coochbehar, Malda and Purulia at 5% level.

Linear growth rates observed for productivity of cereals reveals that it is not the magnitude of difference in number of VLW per Block in IADP, IAAP and Normal districts, but it is the size of the net sown area per VLW which accounts for the variability in growth rates in the districts. Rank correlation between the size of net sown area per VLW per Block and linear growth rate gives positive correlation co-efficient r_r=0.029 (see Table 1). Greater fluctuation is in productivity in the districts like Murshidabad, Birbhum, Malda, and Howrah as they reveal relatively higher standard error of linear growth rate. Linear growth rate for productivity of Hooghly district is significant at 1%, whereas Nadia, Midnapore and Coochbehar are significant at 5%.

Then the effect VLW per Block in the district on cropping intensity was studied. Cropping intensity during 1971-72 in IADP district was lesser than that of all the IAAP districts taken together as well as of all the normal Districts taken together. Of course, cropping intensity for all the IAAP districts taken together was greater than that observed for all the Normal districts taken together.

More complete relationship between size of net sown area per VLW per Block and cropping intensity in the district is given by rank correlation co-efficient value (r_r=-0 007), which is negative in this case indicating inverse relationship between net sown area per VLW per Block and cropping intensity (Table 1). In other words, it can be said that lesser the net sown area per VLW the higher will be the cropping intensity and vice verea. This means effective performance of VLW will be greater if he has under his jurisdiction lesser net sown area or lesser geographical area or lesser number of housholds to be attended to by him.

No definite trend in regard to fertlizer consumption per hectare among IADP, IAAP and Normal districts is observed It is not necessarily that fertilizer consumption per hectare of net sown area in Burdwan is greater as it is a IADP district. Rather, the highest fertilizer consumption per hectare (47.0 kg,) was observed in the district of Hooghly which is an IAAP district followed by 31 kg in Howrah district which is a Normal district. Rank correlation between size of net sown area per VLW per Block and fertilizer consumption per hectare in districts reveals negative correlation co-efficient value (r_r=0.70) which is significant at 1% level. This indicates also inverse relationship between net sown area per VLW and fertilizer consumption (Table 1). Conveying of the importance of fertilizer use and making the farmers adapted in use of fertilizer may be done most effectively if the area of operation of VLW in the Block is smaller,

Percentage of irrigated area of net sown area although depends upon so many factors, the impact of extension work on it is also observed. Rank correlation between percentage of irrigated area to net sown area and the size of net sown area, given r_r=0.75, is significant at 1 per cent. This indicates that inverse relationship is well established (Table 1).

Summry and Conclusion

By the very nomenclature it is not revealed that IADP district should perform better in its various aspects of agricolcural development than IAAP districts and, similarly, performance of IAAP districts in various agricultural development should be better than the Normal districts as they are superior to one another in terms of a number of extension staff and other officers either at village or at Block or at district level. What is more important here is that how much area each VLW commands in each Block of the districts. This means that the size of net sown area per VLW per Block in the district bears a favourable relationship with various agricultural growth indicators. It is revealed from the study that lesser the size of net sown area per VLW per Block in the district, the higher will be the rate of growth of various agricultural activities. In a compartively smaller size of area of operation it is expected that effective innovation and diffusion of various agricultural technology will be more easy. It is also revealed that scope exists for faster growth of agricultural development by increasing the number of field level extension workers not only in each Block of IADP district but in IAAP and Normal districts also which are thought to be less potential for agricultural development and by keeping the area of operation of each VLW within commandable limit.

Table 1

Correlation co efficient (r_r) with estimates of their statistical significance

Bank correlation between		Correlation coefficient (r_r)	t calculated value	$t_{.05}(13)=2.160$ $t_{.01}(13)=3.012$
Net sown area per VLW	× Linear growth rate of area under cereals	0.565	2.46*	
Net sown area per VLW	× Linear growth rate of production of cereals	0.211	0.793	N.S.
Net sown area per VLW	× Linear growth rate of productivity of cereals	0.029	0.104	N.S.
Net sown area per VLW	× Cropping intensity during 1971-72	−0.007	0.025	N.S.
Net sown area per VLW	× Fertilizer consumption per hectar 1971-72	−0.70	3.53†	
Net sown area per VLW	× Percentage irrigated area to net sown area 1971-72	−0.75	4.08†	

† significant at 1%   * significant at 5%   N.S. = Not significant.

Performance of Agriculture in Tribal Areas of Himachal Pradesh

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Introduction

In Himachal Pradesh, the tribal area forms a continuous belt situated in the north and north-east of the Pradesh, comprising the Districts of Kinnaur, Lahaul Spiti and Pangi tehsil and Bharmur sub-tehsil of Chamba district.[1] Snow, glaciers, high altitudes and highly rugged terrain, criss-crossed by fast rivers and their tributaries, are the peculiar features of this tribal belt. The climate in these areas varies from mild cold to extreme cold but is never hot. The people of these areas remain cut off from the rest of the country for more than half the year and limited working season has far-reaching effect on its economy and the socio-economic conditions of the people. The tribal belt in Himachal Pradesh covers about 43 per cent of the total geographical area and 3.3 per cent of the total population of the State,[1] Of the total population, about 74 per cent are scheduled tribes and about 12 per cent belong to scheduled castes.

The entire population of the tribal belt is rural. The decennial growth rate (1961-71)[a] has been of the order of about 16 per cent which is very much below the corresponding figure (23 per cent) for the State as a whole. The people of the areas are by and large illiterate and remained cut off from the modern civilisation for centuries. Their customs and ceremonies with regards to birth, death and marriages, food habits, living conditions, fairs and festivals differ from the people living in plains.

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[1] Census 1971.

[2] Revised Tribal Sub-Plan (1974-75 to 1978-79), Department of Planning' Government of Himachal Pradesh.

[a] Areas which fulfil the conditions of 50 per cent and above tribal population concentration are to be included in Tribal sub-plan (1974-79).

Prior to independence very little attention was paid for the development of these areas by their rulers, but with the dawn of independence these areas started receiving the best attention under various development programmes of the Government which aimed at bringing these areas at par with the rest of the state. An attempt has been made in this paper to examine—

(i) Socio-economic conditions prevailing in the tribal areas of H.P.

(ii) Development of tribal areas of the State after implementation of Tribal Sub-Plan.

Socio-Economic Structure of Tribals

'Growth with social justice' has been an avowed objective of the recent planning. As such various programmes and measures have been implemented during the last two and half decades to achieve this objective. But now it is widely accepted that the economically weaker sections of the population have not been benefited much owing to the the development efforts and a substantial tribal population of the country is one such important segment which has been left out of the mainstream of the development process The socio-economic conditions prevailing in tribal areas depict that there are socio-economic imbalances in various tribal areas of the Pradesh. The problem here is, therefore, how to combat effectively and speedily these imbalances so as to bring the tribal people at par with other areas and at the same time raise their standard of living.

Number of people living per square km. is an indicator of community development i.e. if an area is more developed it will have higher density of population. It is clear from Table I that number of people per square km. is highest in Bharmour then followed by Kinnaur, Pangi and Lahaul-Spiti, respectively.

Table I : Area and Population of Tribal Belts in Himachal Pradesh

Tribal Area	Area in Sq. km.	Population (1971)				Density of population per Sq. km.
		S. T.	S. C.	Others	total	
1. Kinnaur	65530	34090	9669	6076	49835	8
2. Lahaul & Spiti	13929.3	21563	354	5651	27568	2
3. Pangi	1653.7	8978	629	187	9794	6
5. Bharmour	1818.3	19809	3599	3649	27069	15
Total	23954.3	84440	14251	15573	114264	5
		(73.9)	(12 5)	(13.6)	(100.0)	

Further, it was found that in tribal belts of Himachal, the concentration of scheduled tribes population is highest in Pangi and lowest in the case of Lahaul & Spiti[3]. So far as literacy is concerned, which is considered as an important index of human capital development, Kinnaur bears first position followed by Lahaul & Spiti, Bharmour and then Pangi. It is interesting that literacy growth rate between 1961 and 1971 was higher in Kinnaur as compared to the State level as shown in Table II. However, literacy growth rate in the tribal belt is lower than the figures for the State, and by absolute standard even the most developed pockets of Kinnaur and Lahaul-Spiti are well below Himachal's average. Thus there is a lot of illeteracy amongst the tribal areas of H.P. which is one of the main causes for their backwardness and hence these areas deserve special consideration in any literacy programme in future.

Table II : Literacy Growth in Tribal Area

	H. P.	Kinnaur	L & S	Bharmour	Pangi	Total
1961 Census	21,3	15.5	16.5	7.5	7.4	12.8
1971 Census	32.0	27.7	27.1	10.1	10.5	22.0
Growth rate	50.3	80.4	64.7	41.7	42.7	71.1

Occupational Pattern

An analysis of occupational pattern of population of tribal areas shows that number of workers to total population has decreased in all the areas except Lahaul and Spiti. This is attributed to the fact that people have adopted new professions such as business, services etc. Due to dominant role of agriculture in tribal economy the percentage of cultivators and total agricultural worker to total workers have increased since 1970. Further, proportion of agricultural workers was higher in the rest of the areas as compared to State level. This shows that comparatively the districts of Kinnaur and Lahaul-Spiti are better off than Chamba, which may be due to the reason that in these areas people have started shifting toward other professions to earn their livelihood.

Pattern of Land Utilization

Land utilization is a very important aspect which not only gives an idea of the kind of land but also indicates the very existence and development of the community. The percentage of net area sown to

[3] Annual Tribal sub-plan (1978-79) B.P.
Tribal Development Department H. P.

total geographical area in Kinnaur was above and below in other areas as compared to State figure. The cropping intensity during 1973-74 and 1977-78 in tribal areas is far below than of the State. This may be due to the fact that intensive agriculture is not practised due to the lack of facilities, technical know-how, extension services etc. However, the cropping intensity during 1973-78 has increased in Kinnaur and it has remained relatively unchanged in Lahaul & Spiti. Further, it is observed that forest occupy an important place in the Pangi and Bharmour area accounting for nearly 13 and 11 percent respectively of the total geographical area. This feature is almost negligible in other two areas. Also unculturable land which is used as pastures and grazing land occupies a distinct position in the total geographical area in all the tribal areas, which signifies that animal husbandry is the main feature of the tribal economy. It provides drought animals for agricultural operations and manure to replenish the declining fertility of the soils because of the continuous cropping and non-availability of chemical fertilizers.

Characteristics of Tribal Agriculture

the tribal economy is predominantly agricultural and cultivation of land among the tribals was mostly backward and at a primitive stage. At the same time these areas are deficit in foodgrains and cost of transportation is very much higher and beyond the reach of majority of its people. The State Government has, therefore, to spend large amount annually on the subsidy for transportation of foodgrains Moreover, the hilly slopes in these areas are steep and the scanty soil is very often washed away by rain and snow, which resulted in further loss in fertility of land. Therefore, during sub-plan (1974-79) efforts were made to narrow down as far as possible the gap between production and requirements of foodgrains by bringing more area under food crops through soil conservation measures and by intensifying the timely and adequate supply of improved farm inputs.

Cropping Pattern and Productivity

The major crops which are grown in tribal areas are wheat, barley, millets potato (for seed production) etc. The potato is considered to be an important cash crop. Now apple is also going to be an important cash crop the cultivation of which is very successful, particularly in Kinnaur district.

These areas have more than 80 percent unculturable land which can be put for the production of crops. In the development programmes for tribal areas emphasis was given upon covering more area under crops and to adopt improved technology to make these areas self-sufficient in food grains. Comparative change in cropping pattern and yields per hectare of different crops reveal that area under maize, millets and potato has increased significantly while, in other crops, this change was not significant. This change in area under different crops may be due to the reason that farmers are shifting towards more profitable crops and it is further observed that percentage area under millets, barley and potato is more than that for the State as a whole.

So far as productivity is concerned, after introduction of HYV and improved varieties, it has increased significantly in these areas. Further, productivity of various crops has improved remarkably. This shows that there is large potential for intensive agriculture and thus the production can be increased with the economical use of available resources.

Irrigated Area

The rugged terrain, absence of rain and thin cap soil have restricted the sown area in tribal belts to a very small percentage of the total geographical area. In the district of Lahaul & Spiti and some parts of Kinnaur there is not even a blade of grass without assured irrigation. The percentage of irrigated area to net area sown has increased in these areas and was found to be above the State level. This is due to the fact that these belts remained covered with snow for most of the year, which is the main source of irrigation. This percentage was found to be the highest (100 percent) in Lahaul & Spiti then followed by Kinnaur and tribal areas of Chamba district.

To take up any type of extension of vegetation, the prime need is of assured irrigation facilities without which no additional area can be brought under it. The areas of Chamba are steeply slopy. So the extent of irrigation is almost negligible. Main source of irrigation in these area are Kuhls.

The availability of cultivable land per agricultural worker is directly proportional to the level of development. Net irrigated area and net area sown per agricultural worker have increased in these area during 1973-74 to 1977-78, whereas irrigated area per agricultural worker has an increasing trend but at State level it has a declining trend due to the increased number of agricultural workers. Districts of Kinnaur and Lahaul Spiti are comparatively better off than Chamba district.

Achievements of Tribal Sub-Plan

The tribals having settled in isolated and, in certain cases, in inaccessible areas were seldom approached by any development agency to educate and thus to persuade them to adopt the improved technique of agriculture. However, special emphasis was given toward these problems during fifth-five year plan by preparing sub-plans. The share of plan for development in agricultural sector was quite significant and achievements made against the target figures were also remarkable. More than 90 percent of the target in respect of area and production of foodgrains and commercial crops was achieved during 1977-78, while area to be covered under HYV, improved varieties, distribution of HYV seed, agricultural implements and vegetable seed was also more than 75 percent of the target figure. However, distribution of fertilizer was not so significant.

About 35 percent of the tribals are dispersed, and which could not be covered for developmental activities during fifth-five year plan are to be given special attention during Mid Term Plan (1978-83) with suitable developmental activities.

Conclusion

It is a recognised fact that tribal belts are among the most backward areas in our country. In spite of concerted efforts put forth by the Government of Himachal Pradesh, the conditions of tribals have not changed much, may be because of various historical as well as environmental reasons. The entire population of these areas are rural with a very thin density per square Kilometer. The level of literacy is also very low as compared to the rest of the State. Further, Kinnaur district has highest literacy among these areas. The proportion of agricultural work is also higher in these as compared to the State figure, whereas, this proportion was highest in Chamba than in the others. This is due to the predominant role of agriculture in tribal economy. Further, pattern of cropping has significantly changed after the implementation of Integrated Tribal Development Projects. Moreover, introduction of HYV, chemical fertilizers and assured irrigation have increased productivity and over-all profitability as well.

Suggestions

Though, economic conditions of the people of these areas have improved through ITDP, still more efforts are required to bring these areas at par with the rest of the State. The following suggestions may be worth consideration for further improvement of tribal areas of the Pradesh.

(i) For agricultural development the main bottleneck is availability of irrigation facilities, which need to be overcome. In tribal areas comparatively larger proportion of total geographical area is under forests, and unculturable waste which can be utilized for grazing and pasture. So special attention should be given for the development of animal husbandry.

Further, climate of certain belts of these areas, e.g. Kinnaur, is suitable for fruit production. Therefore, attention should be given toward the development of horticultural activities. Extension workers can do a spade work in such areas for introducing modern technology, i.e. to increase agricultural production and hence the standard of living.

(ii) The gainful employment for tribals need to be explored for development, commercial exploitation of the forest resources should be undertaken immediately for this purpose.

(iii) Small scale industries/agro-based industries should be given priority in tribal area. The right types of industries would be agro-based, light engineering, bamboo works, poultry, and sheep rearing etc.

(iv) Since the tribal area of Pradesh offers a wide scope for the generation, so efforts should be made to start the hydel power projects. Such projects will help the local industries, which may provide additional employment to the local people.

(v) Above all, the involvement of local tribal people directly or through their representative organisations is a must for the successful implementation of tribal plan. To ensure this, the process of plan formulation will have to be given due weightage to the aspiration of tribals. The traditional beliefs of the tribals have to be changed by persuasion, but without disturbing their social set up and sentiments.

Can Budget Ensure Economic Recovery ?

Virendra Agarwala*

The Union Budget for 1980-81 has been widely applauded Mr. R. Venkatraman as Finance Minister has displayed the robust pragmatism which could reasonably find satisfactory solutions to the economic ailments of the country. His budget has undoubtedly put a little more money into the hands of wage earners and middle classes, given a powerful fillip to savings and investments and stimulated demand in carefully picked up sectors. The common man has not only been spared but a series of fiscal incentives have been granted which are sure to grant him a little more purchasing capacity. New levies will yield Rs. 282 crore but care has been taken to ensure that the increased burden of excise duties is thinly spread over a wide range of products and that articles of mass consumption are spared from the proposed duty hike. Such large number of fiscal concessions have been granted—on personal incomes as well as on several items of consumption like controlled cloth, sewing machines, cycles and vital drugs that the people do have a sigh of relief. The Finance Minister deserves to be congratulated for reversing the several price hikes imposed on modern living in the Union Budget for 1979-80. But he has forgotten to restore the pre-1979 position in respect of capital gains tax which had made the situation still more complicated. Earlier the rigours of this CG Tax are removed the better it would be for equity and social justice.

Is the budget designed to curb price inflation ? The Finance Ministry has preferred to remain silent on the impact of additional imposts on the price situation. It is true that the budget has initiated such measures which are sure to raise the level of economic activity. It is obvious that monsoon will determine the fate of the economy. It is expected that the saving rate would go up but it is too early to predict whether a higher rate of savings will put the economy on the rails. The total Central Plan outlay has been enhanced to Rs. 7,340 crore, an increase of Rs. 757 crore over Rs 6573 crore (in the interim budget) which is a step up of 14.3 per cent over last year's original outlay of Rs. 6412 crore. This is laudable so far as it goes. But considering the prevailing high inflation rate this level of plan outlay means a fall in real outlay. There will be a sizeable increase in investment in the power, coal and steel sectors demonstrating the government's resolve to deal firmly with infrastructural failures.

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Overall, this budget has not impared a new thrust in terms of public investment. In real terms, the plan has been hardly protected. In other words for the third successive year, plan outlay will remain stagnant. It is equally true that smaller increases in sectoral outlays do not add up to a strategy for reversal of the declaration of the economy. The Finance Minister has not yet indicated that the government is serious either to cut down its unproductive expenditure or not to allow it to be so expanded that the budgetary deficit will not grow so fast as to end up at more than Rs. 2500 crore by the end of the fiscal year. It is misleading to believe that the economy can absorb this growing deficit. Successive heavy imposts on the consumer, Rs. 2100 crore in the form of oil price hike, Rs. 665 crore additional price hike on fertilisers, Rs. 204.24 crore as Railway fare hike and Rs 445 crore as annual new levies in the Union Budget and above all the budgetary deficit of Rs. 1417 crore are sure to place a heavy burden of Rs. 4831.24 crore in a year which is unprecedented in the history of free India. It amounts to no less than 6 per cent of GNP and the per capita burden will exceed Rs. 85. It is sure to be reflected in cost-push inflation resulting in a price rise of 30 per cent in 1980-81.

Mr. R. Venkatraman as Finance Minister has done his home work well. His budget has provided Rs. 340 crore for the new National Rural Employment Programme to enable the states to undertake truly productive works of lasting benefit. It is estimated that the programmes, if properly implemented, could generate 850 to 900 million mandays of additional employment. The process of economic growth will be incomplete unless the benefits of such growth reach the weakest sections of the society. Such outlays are meant to be utilised for helping the scheduled caste families to acquire income generating assets and relevant skills for the betterment of their living conditions. The Budget has created new ground for a special General Assistance of Rs. 100 crore to the states to act as a catalyst in the generation of more funds from other sources including financial institutions. This will enable the states to provide as a package of the inputs needed in an integrated programme for promotion of the socio-economic condition of Scheduled Castes. The Plan outlay on agriculture and rural development in the current year is being increased to Rs. 2.247 crore from Rs. 1811 crore in 1979-80. The budget provides an outlay of Rs. 100 crore as against Rs. 80 crore in 1979-80 on providing clean and safe drinking water in rural areas. Plan allocation for the power sector has been raised from Rs. 2,466 crore in 1979-80 to Rs. 2,745 crore, an increase of 11 per cent.

It was over-due to raise the tax-exemption limit on personal income from Rs. 10,000 to Rs. 12,000. This alone will benefit more than six lakh of income tax payers. The surcharge on personal income in the case of all categories of non-corporate tax payers has been reduced from 20 to 10 per cent. This will not only bring down the maximum marginal rate of tax from 72 per cent to 66 per cent but will benefit tax payers in all slabs of incomes. As a further measure for promoting savings in the household sector the budget has restored incentives for such savings to the pre-1979 budget levels. The tax-payer will now be entitled a 100 per cent deduction in respect of the first Rs. 5,000 of the qualifying savings, 50 per cent in respeet of the next Rs. 5000 and 40 per cent on the balance. Similarly, new industrial units are being helped in raising capital in the market by a 25 per cent tax holiday for 7 years, an additionai depreciation equal to 50 per cent of the normal allowance and a reduction to 25 per cent in the custom duty on plant and machinery. The small scale sector will benefit substantially from the exemption of excise duty on output upto Rs. 30 lakhs. To help the export effort an export-import bank is to be established.

It is worth noting that a smaller deficit than feared has been made possible only by taking credit for a hefty borrowing of Rs. 540 crore from the IMF Trust Fund and Rs. 100 crore by some unorthodox mopping up of funds from the LIC, Unit Trust etc. The residual deficit of Rs. 1417 crore can be further reduced if there is larger compliance in the matter of tax payments and buoyancy of revenues within upswing in industrial and agricultural production. The fiscal policy is required to be so worked out that will reduce wasteful and unnecessary expenditure, invest resources in increasing the economy's production potential and maximise the revenue potential of the existing tax system. If the Government could evolve such policies which could allow the people to release their creative energies to expand the productive apparatus for wage goods, then certainly a higher growth rate can neutralise the adverse impact of expanded money supply on prices. It greatly depends on better management of infrastructure industries which would ultimately determine the tempo of production. How will the Government keep in check the multiplier effect of cost-push inflation of new imposts amounting Rs. 341424 crore and the budgetary deficit of Rs. 1417 crore is yet to be seen. What the government is now required to do is to keep a constant watch not only on reducing its unproductive expenditure so that money supply expansion is kept under control but also to ensure that the potential of the economy is fully exploited.

No doubt the budget is the most effective instrument for promoting economic growth and employment. But other policies of the government should be cordinated with the taxation policy so that what is gained through one set of measures is not lost through another. More specifically, the public sector should be expected to raise resources by way of loans and through savings, the government must reduce its unproductive expenditure so that the money supply expansion is kept under control. 1979-80 is the sad example so far as growth of budgetary deficit is concerned. A limited amount of deficit financing is preferable to avoidable taxation but when the budgetary deficits cross the safe limits than it becomes really difficult to hold the price line. If the Finance Minister is keen to pursue the path of stability and growth then there is no choice but to evolve such economic policies which could accelerate the pace of growth. If the growth remains stagnant at the present level and the budgetary deficit continues to gallop at 1979-80 level then, of course, smaller mercies as proposed will hardly build the economy. People will shortly realise that they have been taken for a ride without knowing that the price they have yet to pay is quite unbearable.

What is important now is to devise ways and means to arrest the deterioration and set the economy on the path of stability and growth. As there is a great deal of inflationary potential in the Indian economy, the prime objective of our economic policies should be to ensure price stability. This will have to be done through an increase in aggregate supply and moderation of aggregate demand A resource constraint is never easily got over by demand management alone ; demand and supply are interlinked through incomes and spending power which make

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Planning for Optimization

R. P. Verma*

The object of the present paper is to discuss how our economic resources are wasted as a result of underutilisation. Though our planners frame the broad outline for the optimum utilisation of national resources, the human failure has been the main obstacle in achieving the goal.

All our efforts are directed towards nation building activity of planning for a bright future. For all-round development we are installing new steel plants, new fertilizer factories, new power stations, extending mining activities, starting new irrigation facilities etc. But equally serious efforts on national level to maximise the use of existing assets which have been created in the form of large plants, railway system, road transport, mining capacity, cement plant etc. have never been made.

Discussed below are the arguments justifying the under utilisation of existing capacities. The final analysis, however, shows that the ultimate responsibility for such underutilisation can be completely attributed to human factor. There may be failure at the level of planning or operation. Or else it may be delayed in supply of equipment or it may be of poor quality. But the supplier has his own problems not very much different from the user. Again it may be labour unrest caused by poor industrial relations or trade union politics. In fact from every angle it is difficult to escape the conclusion that all failures, except in cases of natural calamities, are the results of human failure.

Thermal Power Plants

The installed capacity of thermal power plants of the public utilities is a little above 15.000 MW[1]. At present, rates of investment are Rs. 6,000/- to Rs. 7,5000/- crores. Not only a hugh thermal capacity is being put to a low utilisation but the utilisation is falling year after year. This is a disturbing fact. Since 1976 the highest capacity utilisation was little less than 49% (in 1977), which has come to 46% in 1978 and 43% during 1st nine months of 1979. Even during these 9 months there has been almost a consistent fall in capacity utilisation, month after month, till it touched 39.7% in August 1979. If the utilisation level can be raised to just 5000 hours per year, out of 8760 hours, this will mean that 33% additional power will be available without extra capital investment. In terms of installed capacity, this will mean 2100 MW, resulting into a saving of more than Rs. 800/- crores on a conservative estimate, which is more than total tax efforts of 1979-80 budget.

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Railway Transport

Indian Railways are the largest public sector set-up in India. Their total assets exceed Rs. 5.000/-[3] crores and have an annual revenue of Rs. 2,500/-[3] crores.

Though during the last 20 years or so its freight traffic has almost doubled and passenger traffic has increased to more than 2½ times the rate of growth has shown a definite downward trend during 1977-78. The Railways carried 211 million tonnes of revenue earning traffic which came down to 199 million tonnes in 1978-79. In 1979-80, against a target of 222 million tonnes, later revised to 205 million tonnes, railways are not likely to carry more than 194 million tonnes of revenue earning traffic. Coal is an important traffic for Railways. Presently this constitutes more than 1/3rd of total originating tonnage on the Railway system, but during April-December 1979 railways could load on an average only 8664 wagons against 9250 wagons in the corresponding period of 1978. Naturally nobody can claim that during this period railways' capacity has reduced, as such it only means reduced utilisation of existing capacity. In fact this trend is not new and the reduced growth rate can be traced to the decade of seventies, this is clearly brought out by the following :

Railway Traffic and Earnings

	1961-71			1971-78		
	% Increase	Annual simple growth rate(%)	Compound annual rate of growth (%)	% Increase	Annual simple growth rate(%)	Compound annual rate of growth %
1. Net tonnes km	46.08	4.61	3.9	14.45	2.05	2.2
2. Earnings from goods carried	119.92	11.99	8.10	99.47	14.21	12.20

Earnings from goods carried are for 1971-77, since figures for 1978 are not available.

Due to decreasing utilisation of existing railway facilities, the road transport has to carry larger burden of the freight traffic, as will be clear from the table :

Rail Road Goods Traffic Ratio[6]
(Billion tonne km)
Percentage share

Year	Railways	Road	Railways	Road
1960-61	88	17	83.8	16.2
1965-66	117	34	77.5	22.5
1968-69	125	40	75.2	24.2
1973-74	122	55	65.2	34.8
1974-75	134	30	62.6	37.4
1975-76	143	31	64.6	35.4

During recent years this trend is strongly marked in respect of coal. In 1976-77, railways moved 77% of the coal and coal products of Coal India Ltd. and the share of the road transport in it was little more than 16%. In 1978-79 figures for railways were down to 71% and for road this increased to 22%.[7]

The underutilisation of railway capacity is a burden which a country like India cannot afford in view of much higher quantum of diesel consumption for road transportation. It is clear from the following figures of efficiency ;[8]

Rail=94 kms/tonne/litre
Road=27 kms/tonne/litre

Road Transport

"The average distance covered by a truck in a day in India is ridiculously low as compared with the performance of a truck in other countries. This is largely because of bad and narrow roads and unnecessary impediments on the road. For instance, 50% to 80% of a truck's journey time is wasted in waiting at octroi and other check posts."[9]

Out of this even if just 10% of the time is lost on octroi check-posts this means that out of about 4,00,000 trucks on the Indian roads about 40,000 are not being used and at the present price of Rs. 1.50 lakhs or so per truck, the value of 40,000 trucks i.e. a sum of Rs. 600/- crores of capital is blocked in waiting for clearance at octroi check posts alone.

Cement

Situation in respect of capacity utilisation of cement industry is equally disappointing. Utilisation came down to 71%[10] in 1974-75 from over 94% utilisation in 1955-56. Fortunately after reaching this low level, industry is started looking up and reached a level of more than 88% in 1977-78, but is still far below the level achieved in 1974-75, as a result the country has to resort to import of large quantities of cement.

Paper

There has been a dramatic fall in the capacity utilisation of paper and board industry. The utilisation was 99% in 1970 and has shown almost a consistent fall during the last eight years. The trend can be seen from the following table :

Capacity Utilisation of Paper Industry

Year	Installed capacity (1000 tonnes)	Production (1000 tonnes)	Capacity utilisation (%)
1970	768	759	99
1971	882	781	89
1972	962	804	84
1973	962	797	83
1974	1009	837	83
1975	1068	829	78
1976	1127	880	78
1977	1137	917	81
1978	1375	990	72

Other Industries

The facts which have been said above in respect of capacity utilisation of thermal power plants, railways, cement, paper industries, road transport etc. hold good in respect of a large number of other industries also ; for example, capacity utilisation in aluminium industry was 92% in 1970 and came down to 63% in 1978 ; in regard to vanaspati production, capacity utilisation came down to 50% in 1978 against 64% in 1970. Capacity utilisation fell down in respect of production of commercial vehicles also from 65% in 1970 to 62% in 1978. In respect of electrical motors the capacity utilisation in 1978 was just 57% against 96% in 1970. In respect of certain other important industries also the capacity utilisation in 1978 has seen considerable fall in comparison with 1970. The actual production and capacity utilisation in respect of these industries are shown in the following table :

Capacity Utilisation in Selected Industries[1,2]

	Installed Capacity		Capacity Utilisation (%)	
	1970	1978	1970	1978
Vanaspati 000t	817	1,290	64	50
Aluminium 000t	150	325	92	63
Commercial Vehicle 000s	62.4	79.0	65	62
Diesel Engines 000s	155	304	44	53
Passenger Cars 000s	47.4	52.4	76	66
Rly Wagons 000s	32.8	24.8	37	43
Dry Batteries Mn.	469	1,291	102	64
Electric Fan Mn.	1.8	3.8	85	81
Electric Motors Mn. h. p.	2.6	6.7	96	57
Power Transformers Mn. Kva	6.3	24.1	121	76
Radio Receivers Mn.	2.3	3.1	77	62
Storage Batteries Mn.	1.1	2.5	108	68
Nitrogenous (N) Mn. t	1.4	3.3	57	58
Phosphatic (P_2O_5) 00t	421	1,082	53	57

To meet the increasing demand of Indian industries and agriculture, it is highly essential that capacities be increased and the process of creation of additional capacities slowed down. But creating more and more capacities will burden the costs of production of these industries. Therefore, immediate attention for better utilisation of capacities is needed. Since the main problem is the human factor, there will not be simple solutions. It will be more complicated. The situation could perhaps be remedied to some extent provided a culture rewarding hard work and merit is created and inefficiency be a cause of embarrassment to individuals. For proper check up of the deteriorating condition, an immediate attention is highly needed.

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production and consumption possible. What is required in the circumstances is not a one-track approach via demand management. On the contrary the attempt should be at overall management into which management, demand and control of industry and prices, which are crucial pieces, should be fitted aright. Fiscal policy has all the years being weighted in favour of taxation. Whatever might have been the compulsions of this approach it can be valid specially now that the economy needs a breather. This budget is hardly an effort in this direction. Finally, the authorities must consider the direct impact of the tax-hike on the wholesale price index. If it goes up steeply in consequences, the government will have to pay more by way of dearness allowances to its employees and other establishment charges, apart from the fact that the life of the common man will become still more miserable. It may thus loose more on the swings than it makes on the round-abouts.

Steel Industry in India—Problems and Solutions—A Short Survey

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and
Sunil G. Dhekane**

In India, steel industry is partially government owned There are six plants and out of them five are owned by government Moreover, India's industrial policy resolutions have declared that all new investments in the steel industry will be the sole responsibility of the state. Exceptions are only made for segments of the steel industry amenable to the erection of small units The steel plants are named by the city or town they are located in. They are in Bhilai, Rourkela, Burnpur, Jamshedpur, Durgapur and Bokaro The most striking fact concerning the location of the steel industry in India is its concentration in the iron and steel belt Availability of raw materials and facilities of marketing are main hurdles in smooth organisation of the steel production. Theoretically speaking, the change in the demand in the different parts of the country must exert a great influence on the location of any industry. An illuminating example of this type of influence may be cited from the Pittsburgh-Youngstown area, which has been the prime centre of steel production in the U S A The exploitation of new sources of iron, coal and other raw materials influenced the dispersal of this industry to a great extent But the change in a position of market played an important role in affecting such a development With a shift in population in the west, new areas needed steel for railroads, housing and new plants. Then increased market and technological changes greatly influenced location of steel industry in U S A India is relatively a new country in the industrial sphere, so that such changes are rarely to be found here.

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The Government of India and its planners have surely been seeing that their food would be less plentiful if there was no steel for spades and hoes and their water less pure if there were no pipes. Such is a basic need of this metal as far as steel is concerned The properties of steel have made it very much useful in the modern world No other metal possesses the unique properties which steel does, and which is so valuable and useful for engineering and construction purposes The high durability and toughness of steel, compared with the other metals and its ability to be alloyed with other metals have made it the most important metal that matters.

Thus steel is the most versatile of all materials so far known to man. No wonder steel provides the framework of modern civilisation Steel is thus the basic needs of all developments and India necessitates it most due to her second largest population in the world and her late start for 'development'—in the fullest sense of the term.

Being public enterprise, main interest in the production of steel has not been profits but more output instead. India could succeed in achieving a growth rate of 305% in the steel production from the years 1950 to 1963. This certainly shows awareness of the authorities about such an important product. Nevertheless, it could be pointed out that when considered in absolute quantities, there has been much greater increase in outpute of the countries like U.S., U.S.S.R., West Germany, Japan and U K. than in India.[1] India, just like Italy and Poland, utilised her hitherto unused resource for increasing steel output and hence the 'percentage' increase in steel production is higher in India than on the top ranked producers. Thus, the late start in the production and greater need of it due to scarcity have made it worthwhile to consider the features in Indian steel production. This point could be stressed more by looking at the per capita steel consumption in India. It is appallingly low. It was only 15 kilograms as compared to 681 kilograms in the U.S.A and 503 kilograms in Japan. The world's average per capita figure was estimated to be 150 kilograms at that time.

Production of Steel: In 1950, the production of steel in India was 1.4 million tons of ingots which gave little over one million tons of fiinshed steel. There are only three plants to produce this amount at that time. When the planning period started in 1951, the matters did not improve initially, but the second five year plan started in 1956, and there was more attention to the steel production. The highest priority was given to the steel and iron production and provision was made in this plan to raise the capacity in one step from 1.6 million tons to 6 million tons of ingots per annum. Three additional new plants were set up in this period and all of them were in collaboration with some other governments viz Germany, U.S S.R. and Britain. Specialisation has been the key note of all these new additional plants One was supposed to concentrate only on flat products and the second one on rails and heavy sections and the third one only on making billets, medium and light section and railway wheels and axels.

In spite of all this, the targets envisaged in the second and in the thirds were not fully achieved. The reasons for that were varied and complex. We will discuss them a little later.

Distribution of Steel in India : Indian steel mills have been able to produce only low quality steel products because of the persistent shortages of some forms of raw materials and the system of its distribution forces the consumers to purchase the available product that may not be of their own choosing. However, some consumers are sufficiently influential to improve standards and quality of steel in some Indian mills. The most prominent among them is the railway. The railway's station inspectors are empowered to reject the steel produced if it does not meet the test specifications. Since there is little market for railway rejected materials and tubes, the principal alternative to the production of suitable quality steel in these categories is only the production of scrap.[2]

A substandard production adds in many ways to the structure of consumption on these lines. It has diverted the consumption of steel from the uses that have been accorded highest priority by Indian planners to the uses that have not This has also jeopardised the export of Indian steel in significant quantities. When passed on to the consumers, poor quality steel can lead to unnecessary 'haulage' by railways and needless reprocessing by the consumers Thus poor quality of production has caused the first major difficulty in an efficient distribution of the steel in India. This situation has also been strengthened by a misleading conception of the management of the public sector that the maximization of output is the only criterion of mill's judgement. The bonuses of the workers are related to the total output of the steel mill, not to the profits, not even to the value of the steel produced. It has been pointed out several times that any attempt to produce thinner guage products could lead to labour unrest because it would result to reduction of physical quality of the output of the mill

Distribution of the steel could have been better judged had there been good statistics available. Many times, as it is kind of likely to happen in almost all underdeveloped countries, the available data are misleading. Out of the available statistics therefore the output figures may be misleading Even sales data do not measure useful (or at least needful) production. Some finished steel, as it has been pointed out, is being sold without regard to the consumer wants and at prices that do not even cover the còsts of production.[3]

There are several reasons why the cost of production of the steel is so high in India. More important of them are the difficulties in achieving the raw materials. Since the production itself has its own bottlenecks the improvements in steel market are badly needed.

Market of Steel: The market condition is peculiar in the sense that its state is affected by many non-exogeneous factors such as price control by government. The prices of steel have always been determined by government and the changes in its policies make unwanted ups and downs in price structures There has always been demand for reduction of these controlling factors but government has paid little attention to that. It is just hoped that the new government in due course, would realise the importance of the free economic prices and allow them to govern market especially of such basic products as steel. Thus by denying economic prices to the steel industry, government has deliberately kept the profit margin low. The small and a few steel producing companies badly suffer from this type of price control. This was hampered and restricted new entries in the producing industry. (In fact what the private people and the new entrants can produce are the subsidiary inputs and the raw materials needed for the steel.) The options before the industries to make modernisation of the steel marketing are few. Nevertheless TISCO (Tata Iron and Steel Company) has tried to have such gradual modernisation as it can safely finance along with a program of upgrading the qualities of steel it makes.[4]

Prices are thus out of the controllables' list. This problem could be resolved only with the full freedom of the prices.

The second identifiable difficulty is in management of these public sector mills. Given higher prices, the public sector mills might be judged by their ability to plan, finance, and implement their own expansion programs or, eventually, the erection of new mills in coordination with planning authorities But two of the main reasons of failure in this area are the inability to secure good management cadre and the setting up of achievable targets. A mill's middle management has usually been drawn from the private sector plants or from abroad However, prior to 1963, mill's top management was in most instances drawn from the Indian Administrative Service and all too often consisted of persons with little industrial experience. For this reason, decisions about promotions and dismissals, the purchasing of spare parts and replacements, and a number of other matters, some extraordinarily trivial, were often delayed.[5] The plant's financial advisers have been creating obstacles to day-to-day decision making and in some instances decisions have even vetoed by their nominal supervisors, the general managers. There is also seemingly an inability of the plant's administrative offices to make many of the decisions referred to them.

In some instances administrative officers who are willing to make strong decisions have done so, with unfortunate consequences, For example, a former General Manager at Rourkela determined that his mill could from the start be staffed by most of the German personnel scheduled to fill positions of responsibility. Instead Rourkela was staffed primarily with well-meaning but poorly qualified Indian personnel. Perhaps more than any other single act, this dicision resulted in sorry condition of the plant in the 1960s.[6] Due to these drawbacks in the management system, the Indian planners have not given enough consideration to the problems of insuring that new capacity is utilised in ways most beneficial to the industry. As a consequence, the performance of Indian steel mills has been considerably less satisfactory than it should be. The problem of the location could also be given due consideration. India's comparative advantage in the production of steel is less evident if this production is to take place in mills located in southern and western India. Whether these mills will be as advantageous as mills located at alternative sites in northeastern India will depend upon the validity of several assumptions made on their behalf.[7] These assumptions are motivated by political and ideological considerations and appear to have less economic basis.

Thus Indian steel industry puts forward a wide variety of problems, solutions of which need to have a very thoughtful consideration On economic basis there are different studies and every one of them has tried to offer the solutions in their own way. Here are some of their conclusions. The iron ore reservoirs of good quality could be estimated to be 21,000 million tons in India. Optimum processing and sizing of raw materials and additional economic benefaction treatments are urgently necessary for their proper utilisation. The case of coal reserves is not very different. The reserves of good quality metallurgical coal have been estimated at about 2,000 million tons Washing of coal presents a special problem due to the intimate mixture of mineral matter in the coal The problem of raw materials could be solved only by having "judicious planning" of the washeries. Washing of coal is highly desirable firstly to remove the impurities which generally occur in coal and secondly to reduce high ash contents. Washing helps to reduce the bulk (involved in transport) and improves the utilisation of the seams hitherto not worked because of the low quality. All this procedure would solved some part of the problem of inputs.

The location of such washeries is suggested for near to every new mine for the economy of transport. By an introduction of such washeries in the Hindustan Steel Limited (HSL) the situations have improved considerably after 1963. This experience should serve as a guide for the future development of the industry.

An efficient system of transportation is an absolute necessity in the development of the steel industry. About 5 tons of raw materials are needed for the production of 1 ton of steel, so that in the production and consumption of the one ton, transport of about 6 tons of goods is involved. For every ton of steel produced, about 17 tons of rail freight have to be handled within a plant. About 90% of the total transportation is done by railways Hence railways development should be stressed more. The increase in route mileage in the 'coal belt' (the region of coal mines) has been negligible. The very large anticipated increase in traffic in the iron and steel belt and great preponderance of the products of mines therein, make it imperative that the improved types of rolling stock and improved transportation methods be concentrated on that region to obtain best possible results. It is suggested that at each steel plant a principal stockyard for finished goods be created with regional stockyard at each important consuming centre, so that economical and prompt transportation can be achieved by making the movements generally in full trans loads. Road facilities could also be improved simultaneously. Together with the above, the following recommendations could be made about the development of transport in general.[7]

a. An agency that will link up the consumers, the producers and the railways may set up to submit programs for the coal supplies having constantly in view the larger interests of the country

b The establishment of coal dumps at the consuming centres to be operated by stockists should be pursued so that consumers asking for their entitlement individually could be catered to.

c At each steel plant, the road facilities which are in general very poor in India, should be improved to ease the burden on the railway otherwise.

The reorientation of the production pattern of steel is also necessary for meeting the growing needs of the country, e g., it is necessary to increase production of rolled steel in the main steel plant. In view of the delays that have occurred already in the expansion of steel plants for the rolled steel production, povision may have to be made for the import of certain categories of the commodity for the present. Increase in the size of the steel plant is another recommendation needed to be considered seriously. All over the world wherever space and opportunity permit, steel plants are growing larger and larger. For instance, in U S.S.R. one such plant in Magnitogorsk is built with capacity of 15 million tons Even a small country such as Czechoslovakia, with a population of one thirtieth of India's, is today installing a new workshop at Kosice in East Slovakia with a capacity of 4 million tons but laid out for 8 millions tons. Where raw materials and steel demand warrant and they surely do in India, a plant with an output of 10 million tons is technically feasible and economically desirable. There are various arguments for and against the size of the plant. A large steel complex would have higher capacity production units and high labor productivity. Its performance and operation may not be any more difficult than that of a small plant, povided, of course, that responsibilities and power have been clearly delegated, procedures well-established and personnel at all levels suitably trained Besides, in any country ideal locations in proximity to raw materials and water resources are limited and it is, therefore, necessary that where such locations are available, they should be fully exploited by making provisions for large future capacities. Thus, regardless of the size and location of the steel plants, their lay-outs should be planned in such a way that it is capable of large expansion to meet the growing demand for steel.[8]

It is agreed that in a country like India, patience and waiting are necessities of the effective planning. It is also true that periods of more than two years are necessary even for setting a blast furnance into operation. The initial difficulties to set up a plant are wide, varied and complex. But these problems which seem to be unsurmountable at the first sight would have to be effectively met and overcome. In conclusion it is suggested that there is the necessity of constructing both small and big plants more in number than now existing, in an emergent steel producing country like India. The lay-out planning of the small plants should be such as to permit future expansion without difficulty. With a good implementation of these suggestions the prospects are indeed bright in as much as there are abundant raw materials for utilisation in the industry and growing market for steel in the county.

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Multinational Corporations : The Exploiting Feuds—III

Som Deo*

MNCs have been linked to the viability of the entire international monetary system. They have the potential power to 'precipitate a currency crisis' by moving their assets from one currency to another. Any future monetary regime should take into account the implications of the operations of the MNCs. In the Euro-currency markets the influence of these super giants is not available.

The formation of MNCs has proved the "political dominance from the economic dominance". The effectiveness of the host countries' government policies has been nullified by these super giants. In many developing countries these MNCs have openly violated the sovereignty of the country. Most often this is displayed in attempts to change the direction of local development plans or local legislations in such a way which is favourable for them.

Moreover, the production patterns of the MNCs are not according to the need of commonman ; they produce either sophisticated capital goods or luxurious goods which are of little importance for the people of developing countries Further, the developing countries are also importing the culture and ideas together with goods. And those goods produced by the MNCs which are of no use are consequently imported. Thus there is again the assault of MNCs on the 'Third World's culture. These MNCs are largely responsible for "demonstration effect" in the developing countries.

India and the MNCs

The foreign corporations in India could have gone away from India. They were frightened that after independence India could restrict the foreign imports by imposing various restrictions and there may develop the "Swadeshi spirit" (but it has not developed

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so far). That is why they continued their production in India itself. Moreover, the cheap labour was abundantly available in India. Several academicians have also advocated the case for MNCs in different forums and we sometimes find their views reproduced even in official journals.[21] The recent report of the UN panel headed by shri L. K. Jha has dealt with several technical aspects of the relations of the host countries and the MNCs.

Some are of the opinions that foreign investment in the country should be encouraged. This argument underlines that the saving gap will be filled by this device But actually this is a phase delightfully vague. There are several inadequacies in this argument even if one accepts the political premise that there is no harm in mortgaging our economy to the multinationals. Though we hold abundance of cheap labour and a relative abundance of skills which are in quite an excellent position to attract the foreign investment. But these foreign corporate investors are not merely in search of cheap labour but docile labour also.

The consequences of India embracing the MNCs to promote accelerated economic development, resources mobilisation, reduction of key resource scarcities, and to facilitate transfer of technology and improve balance of payments position can be analysed only in relation to the past and other countries' experience and future consequences.

In our country the General Motors have been prevented from developing the production in respect of automobile manufacture. This has been done in the direction of restricting the extent of domination. This cannot be claimed, however, in respect of other collaboration such as in the field of synthetic fabrics. The determined efforts of a few international cartels e g. Italiriscosa, succeeded in breaking our resistance to synthetic yarns and fabrics and introduced us to the headlong course of neglecting our cotton textiles and, above all, rendering them incredibly prohibitive for the commonman.

During 1970 the MNCs operating in India remitted abroad about 120 million dollars. This was 6% of India's total exports of 2000 million dollars for that year. The same was 16% in Mexico. This clearly shows that the earlier stage which was in favour of developing countries is now moving in favour of multinationals.

The Government of India can extend its hand to help the MNCs if they show interest in the resource development activities. It may be undertaken by themselves or with collaboration of Indian business corporations. There are quite a few professional sociologists and economists who speak very enthusiastically about the MNCs and that should not be overlooked. What we have to consider is the ultimate interest of the nation.

Under the Indian conditions, whatever may be the merits of profit maximisation or optimisation, the growth of foreign capital monopoly is bound to disrupt and ruin the life of many existing institutions There is likelihood that MNCs will influence the fiscal policies through government machinery in host countries if they are allowed on a large scale. In India there was a substantial increase in the investment of MNCs in their Indian subsidiaries during the two years from 1972-73—1974-75.[22] After 1975 an increase is also witnessed.

In India recently the petroleum industry has been taker over by the Government after paying huge amount of compensation and Coca Cola issue has been settled by the Janata government and the IBM has also stopped functioning in response to the provisions of FERA. Rs 1,800 crores have been invested in India by foreign companies and Rs 90 crores are being repatriated annually. (See Indian Express dated September 14, 1977). The failure to control the direction of new private foreign investment (out of profits and reserves) by the erstwhile FERA Companies is even more serious. While all the affected companies have not formulated such plans (several having accepted the 40% formula straightway or pulled out), many have. An outstanding example is Hindustan Liver, by far the largest of the FERA companies in the country, with an expected turnover of around Rs. 300 crores in 1979. This company which is entirely run by Indian managers, provides an object lesson on the perils of making hasty generalisation about the effects of investment by multinationals in a less developed country.

The dilution of share holding whether to 51% or 40%, should be allowed only through the issue of new shares, designed to finance expansion of the core or high technology sectors. Companies that do not wish to expand into the core sector, and only wish to sell existing shares in order to get under the FERA barrier (after which they can expand more or less at will over a fairly large area of industry) have no business to stay on in this country. The government will do far better to nationalise these companies outright at the face value of their shares. (see The Economic Times, April 19, 1979).

Moreover, the formation of policy for the multinationals is less important than that of their implementation. The quick and better implementation is all the more necessary for getting the fruits of the policy. For instance, the recent Drug Price Control Order (DPCO) is being delayed unduly in its implementation. The only reason is its being complex. Now the drugs have been classified in four categories as against two in the DPCO of 1970. But the categorisation is still more difficult For example, preparation like aspirin falls in category I, but with some other combinations, it can be categorised in other groups.

Conclusion

The situation which till now determines the techno-economic domination of the MNCs in the less developed capitalist periphery is increasingly changing. Under the impact of the change in the relationship of world forces, the growth of techno economic possibilities of socialist community and the economic achievements in individual developing countries, particularly in the public sector, the greater dependence of the developed nations on non-reproducible raw-materials and the coordination of action by developing countries, clearcut shifts are taking place in the character of relations between the developed nations and the 'Third World' on the whole. The reactions of the MNCs to these alienations are not uniform. Some of them merely use this as a pretext for intensifying their intrigues. In the main, however, ideologists and managers of the MNCs are already aware of the changes under way. "My own conviction is that the days of the MNCs as we know it today are numbered", Peter P. Cabriel, one of the MNCs experts declared, "the era of multinationals corporate growth will give way to an era of institutional change and adaptation.[23]

In conclusion, it seems that a regime of multinationals would offer underdeveloped countries neither national independence nor equality. It would tend instead to inhibit the attainment of these goals. It would turn the underdeveloped countries into branch-plant countries, not only with reference to their economic functions but throughout the gamut of social, political and cultural roles. The subsidiaries of multinational corporations are typically amongst the largest corporations in the country of operations, and their top executives play an influential role in the political, social and cultural life of the host country.

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(Concluded)

Government, Taxation, and Public Sector

Michael Meacock*

Government must limit its own activities to legislation only.

More specifically, government should not itself engage directly in economic activity, in the operation of commerce and industry. There are several very good reasons why this would not in any case be necessary under the Objective Policy of Non-Aggression ; there is also an important reason why it would be constitutionally inadvisable.

The job of government is fundamentally one of judgement. A government is continuously viewing, monitoring, analyzing the multitude of human activities, ensuring that as few as possible of these activities contravene the government's policy. Just as a judge should not sit in judgement over his close relatives, so the government should not attempt to judge itself. Government must legislate in relation to industry and commerce ; it must make judgements on wage/price evaluation, quality standards, planning, and investment. This it cannot do properly in respect of industries and services which the government itself operates. Examples have been quoted time and again in the British economy where, for example, vital decisions on pricing or on longterm investment plans for television, telecommunications, railways, coal and steel, have been avoided or unsuitably influenced by short-term political expediency. If government is directly involved in industry and commerce, it cannot then legislate without bias. In other words, direct involvement in the operation of industry and commerce explicitly invalidates government's capacity to perform its own political job correctly, responsibly, and without bias.

However, in the case of Objective Policy of Non-Aggression, nationalization of industry and commerce is not necessary. The motivation behind all nationalization, from strict Marxian theory to Western democratic "mixed economies", is the suspicion that private industry is motivated wholly by private profit and that social responsibility may be totally lacking. While this state of affairs may be acceptable in a manufacturer of plastic buckets, it may not be considered acceptable in essential major national monopolies—national transportation, communications, power, and so on. So the answer is State Takeover. We have already noted in a previous article on Policy however, that whereas the low degree of government control exercised by Capitalism-Conservatism may indeed permit certain unsavoury business practices and attitudes, the outright takeover solution of high-control Socialism-Communism goes to unnecessary extremes. If it is felt that commerce and industry is conducting itself in certain respects improperly, then the answer is to prevent only those improper activities through appropriate legislation.

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* Wales / G. B.

** This article is the third in the series of articles planned by the author.—Editor.

The Objective Policy of Non-Aggression, when applied in the economic sphere to industry and commerce, produces three main areas of legislation :

* wage and price evaluation ensuring fair wages and prices for employees and consumers ;

** Standards, ensuring the best in design, and production/management ;

*** Overview Planning, as a guide to industry and commerce, and particularly to banking for investment purposes.

Providing the government inteprets these three areas correctly and exercises its powers constitutionally, a high degree of social responsibility will be assured in commerce and industry though it remains fundamentally motivated by free individual enterprise. In other words, if government were to do its political job correctly, it would have no need to operate industries and services (to the detriment of its own political bias).

Taxation

Objective Policy law is sufficiently strict to ensure that commerce and industry operates with maximum efficiency and sells its products and services at fair prices. This must apply equally to government itself—and to the constitutional support services (constitutional executive, police, justice, armed forces). Maximum efficiency at minimum cost—this must be applied with particular stringency to government, which should indeed set an example in this respect.

In addition, government under the Objective Policy cannot take personal earnings (in the form of income tax) as of right. Government and Constitutional Services, like any other industries and services, may only charge citizens for services rendered. Maximum efficiency at minimum cost—and charges must be levied fairly and with the minimum of personal intrusion.

In most economies, taxation is to a considerable extent redistributive—rob the rich to pay the poor ; but the establishment of fair wages and prices removes the major justification for this. Objective Policy and Socialism-Communism agree in their condemnation of the exploitation of employees and the high unjustified profits of capitalist entrepreneurs ; but if remunerations are unfair, then the correct solution is to make them fair (Objective Policy wage and price evaluation) rather than leave them as they are and redistribute through punitive taxation which burdens the hard working manager and the factory worker's overtime as well as the company director's profits.

Another factor in taxation is welfare for the unemployed. The object of planning and investment must be to eliminate unemployment as fast as possible at all levels. And with wage/price evaluation, the economy need not be held back to control inflation (see previous article on Banking for Development).

There must always remain certain areas of welfare for which the State has to be responsible—orphans, the handicapped, for example. In such cases however, services should be as independent as possible, and aid should be directed towards helping the unfortunate to help themselves ; the importance of self-respect and self-support should never be under-estimated.

In education too, self-support is important. This is not a matter of saving taxes (though in many developed countries education is now the largest tax expense) ; self-support is important as an essential part of the educational process itself. If educational facilities at junior and middle levels are to be expanded considerably without imposing an intolerable burden on society, schools must begin and continue as self-supporting entities. In China and Cuba, the school curriculum consists of academic work, and productive work. The productive work may be agricultural or industrial, contributing to the self-support of the school, or contributing to the local economy. Education thus becomes a preparation for the realities of life and living ; and it ceases to be a burden upon the tax-payer.

Health-care too should impose minimal charges and offer maximum efficiency. The Chinese "barefoot doctor" system (adopted also in Tanzania) does. in fact make highly efficient use of talent and resources. This system makes efficient use of both semi-and fully-skilled medical personnel ; it also offers rural people a local, accessible service staffed by local, familiar people

New-Style Government

Self-discipline is one of the hardest tasks known to man. Since government often, if not always, consists of men and women who have fought and climbed for this position of power and may well feel they have no intention of not using their power to the maximum, self-discipline on the part of government is almost unheard-of.

However, under a strictly definable Policy, such as the Objective Policy, the function of government becomes purely interpretative. Government must interpret the policy with positive enthusiasm, flair and imagination, yet at the same time remaining always subservient to the Policy. Certainly any leeway for arbitrary action is now no longer a part of government. Governing becomes less a process of wielding personal power, more a process of enlightned administration, administration according to established disciplines of interpretation which any educated citizen may observe, and monitor for correctness.

This new discipline of doing a routine job with imagination and enthusiasm requires a new breed of men—men whose genuine concern is the nation's welfare and advancement rather than personal gain.

The discipline extends through to efficiency of operation, and of course to cost A new style of government must be developed, practical and down-to-earth. Conducting business for the sake of achievement without unproductive social trimmings, getting on with the job, keeping both feet on the ground, knowing the people and their problems, seeking real solutions to immediate problems rather than looking to the magic of high technology and international aid.

A particulary significant area for economy is always "defence". Achieving nuclear capability at enormous expense is strategically dubious and environmentally irresponsible. But worst of all, in a nation where there is homelessness, disease and stravation, it is simply criminal.

The greatest contribution to world peace and stability has yet to be made—when one country, just one, sets its own house in order by creating universal prosperity without exploitation.

Geographical Planning and the Basic Community

The vision of an enormous country—an entire sub-continent—covered haphazardly with thousands upon thousands of villages, town and cities, with the occasional "super-city" bursting at the seams, its services overloaded to breaking point, presents a mind-reeling planning task. It also presents a vision of habitation with no sense of meaningful community. On the one hand are villages too small to supprort the most basic of services ; on the other hand are cities whose size has grown beyond functional workability. If we are to establish any sort of a foundation on which order can then be built, we must ask a question which has never yet been properly answered.

The question : What is a community ?

The word "community" orignates from the Latin "con" (together) and "munire" (to fortify), suggesting that people originally came together for purposes of fortifying themselves against attack from a common enemy. Fortification was the first of many motivations for coming together ; in all cases people were doing together what they were unable to do singly. First fortification, then commerce, education, entertainment. The list is now endless, but the "con" is the essential common element : coming "together" to do "together" what they cannot do separately. A community is thus a coming-together, this establishes a basic concept of movement—movement from a periphery towards the centre, or common meeting ground. People come together from isolated country homes and farms, and from the outer edges of the village into the centre. The village, as the smallest unit, can provide only limited basic services. So another pattern of movement needs to be established from surrounding villages to a central town, where a greater size of population can generate a greater selection of services. Likewise towns are joined to cities for even greater specialization of services.

Thus we establish a series of webs, small webs representing individuals joined to villages, larger webs of villages joined to towns, and larger webs of towns joined to a city at the centre.

The nature of central gathering points—villages, towns and cities—the very *purpose of their existence*, is to provide services of an ever-expanding degree of specialization. This in turn sets optimum sizes—minima and maxima If the smallest unit—the village—is too small, then it will not cater for even the basic needs of simple day-to-day requirements. If the largest unit—the city—is too large, then it will split into separate suburbs, it will become too large and too widely spread to offer its various services within a convenient area of access, and its essential services of drainage, power, transport etc as well as its general environment, will become overloaded and will deteriorate. Function defines minimum and maximum sizes, below or above which the function will not be fulfilled.

A further vital point established in the basic definition of community is the fundamental concept of *motion*. A community is a coming-together, a concept which implies not only a centre to come to (village, town or city), but also the movement of coming and going. Thus transportation is a major and an integral part of the very concept of a community, without which the rural population becomes divorced from the centres and the overall commuity does not function properly. Village people may well appreciate their quiet rural life, but they need periodic access to the big city for specialized needs, and for entertainment. If they are denied this, they will lack economic and social fulfilment, and they may well decide to move to the city permanently This problem, together with the economic factor of inequality between rural-agricultural and urban-industrial wages, is responsible for the continuing mass migration from country to city, to the detriment of both

We can now establish a theoretical community plan which would look as follows. Begin with a square on a map. In the centre, a black spot denotes the city. Lines radiate out from the central city in several directions terminating in other smaller spots representing towns. Similarly, from each town, lines radiate out terminating in dots representing villages. The whole square is a community—a county or district ; all the parts are inter-dependent. The whole is a self-contained, mainly self-sufficient unit satisfying almost all of its own needs. The lines denote movement, which in practice should be assisted by cheap transportation accessible to all, for without movement to and from the centres, the centres will not fulfil their purpose.

This county square is the basic community unit, which can now be repeated indentically across the nation as area and population permit and require. National transportation between these district-squares, between the county centres, should be in a grid pattern, which ensures equal prominence to every country centre.

Transport.

If we now consider specific transport modes, we immediately encounter an area in which developing countries can learn from the errors of the developed. Private individual transport, specifically the motor car, grew slowly. From the humble, almost joke beginnings of the awkward and ungainly "horseless carriage", seen only occasionally and the object of curiosity and amuzement, the car increased in speed and numbers throughout this century, making ever greater demands on land in city and country, damaging and destroying the environment, trees, air, peace and quiet, buildings and animals, not to mention large number of people. Energy-hungry, inefficient and costly, the car entrenches itself and ensures its own growth ; for more cars mean more parking space, wider and larger roads—which cause cities to spread further which create more need for cars !

If the developed world were developing all over again, but with the advantage of hindsight and experience, would its people and its planners choose individual private transport ? In the 1960's the answer would have been "yes". Today the answer would be doubtful, as more and more towns and cities are discovering the joys of pedestrian-only centres, and as environment-consciousness and energy-economy lead to a revival of public transport. In the 1980's no doubt, private transport will find general disfavour, and by the year 2000 it may be facing extinction.

India is fortunate in having one of the world's finest national railway systems. This needs to be supported by good local public transport, with urban planning oriented to public not private transport. Compact cities, space-saving and convenient, are coming back into fashion in developed countries after the devastation of wind-swept urban motorways. The old markets which are a feature of so many of the older Eastern cities are a positive asset to which planning in developed Western countries is now returning. That they should be clean and well served by sewage and power is self-evident ; but compactness should not be sacrificed and destroyed—it is a convenience to be valued, preserved and extended.

The vital issue first and foremost is to define the concept of community, and then to define specific county-districts physically across the nation. This will serve three significant purposes :

* First, it brings order and meaning into a previously vast and incomprehensible mass of unrelated habitation.

** Second, by bringing up the population of villages to a minimum viable size, and gradually reducing over-sized cities to maximum viable size, defining inter-dependence within county-districts and by establishing transportation services within the county-districts, a real sense of community can be developed together with the economic and social advantages which should naturally exist in properly developed community.

*** Third, it now becomes possible to select a typical county-district, and single it out as a pace-setting county. Concentrate on this one county in every respect—planning, transportation, services, agriculture, industry, Standards....and then ensure a chain of communication so that all others can observe, learn and follow. In this way the "enormous" size of India and her problems become readily comprehensible and manageable problems of just one single county.

The Path of Action

India is fortunate in having a just and stable constitutional framework and tradition ; put to the test both by Mr. Gandhi's autocratic emergency and by Janata Party's inactive disarray, it has shown remarkable resilience. India also has the associated advantage of a disciplined constitutional force (police and armed forces). Thus, unlike the world's numerous despotisms where political dreams centre upon the overthrow of the current brutal dictator, the leading political issue for India is the joint issue of Policy and Expertise in Interpretation. What India needs, in other words, is a right Policy and the expertise to interpret and apply that Policy correctly, coherently, and sensibly.

In earlier articles in this series, specifically the second, we discussed a new political Policy, based on Non-Aggression. This Policy and its implications were then explored in further articles with respect to economic policy, taxation and public sector, physical resources planning, and so on.

Policy, the source, the mainspring, the coordinating force ; but Policy needs interpreting, and this calls for expertise and action.

Thus we confront the nation's political and economic thinkers and intellectuals—each and every one. Economists, politicians, agronomists, sociologists, planners, in universities, journalism, banking industry and commerce, and in government departments. The object is to establish and build a bank of political and economic expertise channeled into a single co-ordinated Plan for overall national development, releasing, encouraging and guiding the people's enterprise and aspirations to their full flowering.

At this point we invite you, the reader, to pause and think ; perhaps to re-read the previous paragraph but this time, not as academic literature, but as a call to action addressed to you, personally.

The suggestion now being made is not an easy one to answer. We are all subject, in our everyday work, to immediate economic discipline and most probably to orders from superiors. By contrast, the essence of this series of articles is a call to action—action without orders or outside discipline. It is for you, the reader, to answer the call, without orders, or even personal invitation. It is for you to answer the call, solely upon your own personal initiative. For what we are proposing here is a new kind of service ; it is not a service of managements and employees, but a service of equals, contributing voluntarily. If you are waiting to be invited to contribute you are missing the point—there is no one to invite you but yourself. If you could have a useful contribution to make, take the initiative, and join others who will also be coming forward with their own contributions, whatever they may be. The first step therefore must now be for each and every reader to consider carefully and make specific proposals as to his or her own specific project or area of study. A list of some suggested Projects follows this article.

The first step is the vital breath of life which, if taken by a sufficient number of the country's thinking people, will infuse initiative, action—life itself—into this new movement, the object of which is to produce a co-ordinated Plan of Action.

The first step is vital—the step of action. The second step is equally vital—the immediate qualification of action by discipline. Unco-ordinated unrelated random statements, however learned, however pertinent, will carry no weight and exert no influence. We must speak with one voice. A guiding Policy with a carefully formulated (and rigorously observed) procedure are vital to success. Initiative, and discipline. Both self-imposed. This is quite a task ! And yet, if we can succeed we would have an on-going unified Plan of Action, born of the fundamental guiding Policy of Non-Aggression, coordinated, disciplined, shaped by debate and consensus, the creation of numerous thinking people offering collectively an enormous range of ideas, viewpoints, experience and expertise-thinking people moreover, whose loyalty is to ideals rather than to personal political advancement. We would, in effect, have a Plan of Action unique in the world's past history or current experience.

Procedure

There may be two types of contribution : institutional (university, organization, special interest society, etc), and individual.

If we can first of all get together the institutional contributors, each offering a special project or area of study, then each institutional contributor can take in contributions from individuals with the same interest. Let us say, for example, that a particular university decides to concentrate on transportation (having already, perhaps, a faculty specializing in this subject). Study and debate will take place within the university ; this could be published regularly in a very simple duplicated news-sheet, for circulation within the university and to individuals outside who have some special interest and talents in this area and wish to be kept informed and to make contributions to the debates and decisions. Conclusions could then the forwarded to a single National Co-ordinating Centre, and published in article form for national circulation.

Thus we can propose a basic pattern to start off, where the basic unit a action, debate and decision is the institution or organization specializing in a specific project or area of study. Individual contributors outside the institution or organization can be kept in touch and would make their own contributions via the institution. Finalized contributions from these institutions are then co-ordinated at a single National Co-ordinating Centre, and conclusions published for national circulation (initially, for example, through the medium of Economic Affairs), with possible further debate then arising as a result of publication.

Discipline must be strictly observed by all contributors, institutional and individual. Specifically:

—the need to work at all times within the definitions of the new Policy of Non-Aggression;

—the need to relate all proposals, debate and conclusions to the objective of ACTION—not academic debate for its own sake. Debate must be disciplined and to the point, conclusions brief and specifically ACTION-related;

—the readiness to co-ordinate one's own area of action with related or contiguous areas;

—the need to bear constantly in mind that the objective is to build and present a coherent, co ordinated Plan of Action based correctly and clearly on the Policy of Non-Aggression. The whole is more important than individual parts, and individual personal point-scoring is strictly Out of Court!

A list of Projects and areas of study follows this article; most of these are essential to a co-ordinated national Plan.

The 18th century English philosopher Adam Smith observed

"all that is necessary for the triumph of evil
is that good men should do nothing".

At this point we might paraphrase his observation, for likewise

"all that is necessary for bad policies to rule
is that men of good ideas should do nothing".

The next step is yours.

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Every day the prices of essential commodities keep soaring. Our daily necessities are so difficult to procure. More and more items are going out of our reach. This is our daily experience. Has this problem no solution ?

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Government of West Bengal

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NOTICE

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Calcutta,
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Publisher

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ECONOMIC AFFAIRS

Volume 25 September-October 1980 Nos. 9-10

National Integration

The National Integration Council has been reactivated after a lapse of twelve years as the communal, sectarian and separatist forces are active to disintegrate the country. In a recently held meeting of the Council many *pundits* pointed to all possible factors responsible for the spurt of divisive forces leading from economic and social exploitation and regional imbalances to the games of foreign hands. It was proposed by some that public education should be used as the intervening factor. The meeting ended with the adoption of a formal resolution that a Standing Committee should be set up to keep constant watch on the activities of the communal and divisive forces which would also monitor the progress of the implementation of the decisions taken by the Council.

Communal and divisive forces were most active in India during the British rule. Hindu-Muslim confrontation, high caste-low caste-tribal confrontation, and the communist and non communist confrontation were the conscious making of the divide-and-rule policy of the British Government. Of course the main thrust of idelogical confrontation came from 'Comintern'. These confrontations led to the 'two nation theory' tabled by the Muslim League, seconded by the Communist Party and warmed by the national moderates against stiff opposition by national visionaries like Subhas Chandra Bose.

British rule has gone but the divisive forces have remained. They become active whenever the country falls sick. This is an environmental factor. For the divisive forces do not act on their own. They require stimulation. Who stimulate them ? During the British rule they were the Muslim leaders, high caste leaders, low caste leaders, tribal leaders, feudal leaders, ideologues and political leaders. In those days the leaders were well marked for they wanted to be marked like that, for they were the leaders of national factions. Today they do not like to be marked like that.

They like to be marked as a national hero, separating themselves from the sectarian process, to climb to power.

Advanced people should come forward to identify them, isolate them and eliminate them and also to reveal the true character of their interests. It is not wise to generalize causes of the rise of divisive forces or evade problems arising out of it. There is no country where there is no racism, regional imbalance, economic and social exploitation—may it be the USA, the USSR or Japan. But there are no such divisive forces as in India. For there the thrust for power is preconditioned by invincible allegiance to national unity and prosperity.

The weeds will always be there. They should be kept socially subdued in intensive care cell under the care of the people trained in national consciousness for attaining the eventual objective of national prosperity the base of which should be mutually beneficial social and economic relations. In this society one should be marked as 'Indian' only and the class character of the society should be expressed as 'developing class' and 'developed class'. There should be complete harmony between the two and the two will work hard to close up the 'gap', which has been the creation of history, for national interest, maintaining the minimum difference for providing material incentive for efficient production

The task is difficult. But not difficult to overcome. For the makers and markers of divisive forces cannot solve the problem of divisive forces—contradiction will bring them down The fear is if it is not taken up now with right earnestness it may then be too late for the country to mend the wrongs.

Review

Unemployment in Karnataka South India, Franklin Chinna Swamy Vivekananda, Uppasala Studies in Economic History 19, 1979.

The work is the author's doctoral dissertation at the Uppasala University. It bears the marks of extensive study in both theory and practice of employment in Karnataka. For the purpose of study the author included all persons in the age-group of 15 to 59 years as eligible for employment. He covered all the 19 districts interviewing on sample basis 6,009 households both rural and urban. He estimates that 28 per cent of labour force are unemployed, 38 per cent seasonally employed and 34 per cent fully employed. Karnataka has a high dependency ratio. It is 101 as against 92 for all-India (1971 census). The 1971 census however puts the Karnataka figure to 94 The author also studied the relative employment of urban and rural labour forces and also of the various religious and age groups in urban and rural areas. His hits on irregularities in Employment Exchanges are valid more or less for all Employment Exchanges in India which should be an eye-opener for the Ministries concerned. The author is against the claims on services of the 'sons of the soil'.

The author deserves high appreciation for this useful work.

A Market Anti-Inflation Plan, Abba P, Lerner and David C. Colander, Harcourt Brace Jovanovich, Inc, New York, 1980.

The inherent flaws of capitalist free market mechanism left no illusion for the authors not to bear out the limitations of the traditional methods to solve the problems of inflation and stagflation. They suggest MAP (Market Anti-Inflation Plan) as a cure to these ugly faces of capitalist economy. The MAP attempts to combine the positive elements in the approaches of monetary, fiscal, wage and price policies with the free market mechanism. MAP claims that this will leave all actual prices and wages free while stabilizing the price level, enabling monetary-fiscal policy to practise sound finance.

The practice of MAP depends on MAP credit the complex working of which is oversimplified. The authors have no reservation to say that MAP stops the actual inflation but cannot destroy or even weaken the inflationary expectation—much of the practical weakness of MAP is embedded here. The MAP has little relevance in developing economy where business is less organized and interest rate has little influence on inflation. Nonetheless MAP is definitely an alternative to the traditional method of curing inflation and it may be tried in an economy well developed for the MAP condition.

Managerial Economics, J. R. Davies and S. Hughes, The English Language Book Society and Macdonald & Evens, London, 1979, Price £ 0.75.

The book is intended primarily for students of the Diploma in Management Studies. and the first year of B.A in Business Studies in U K. universities. Management studies have also found place in the course of studies in some Indian universities. The topics covered in the book largely cover also the syllabus prescribed in Indian universities. The book dwells on bussiness objectives, choice of corporate form, demand analysis, theory and practice of cost analysis, market structures, pricing and investment decisions of private and public enterprises, cost of capital, corporate strategy and its implementation. The discussions of the topics are brief but to the point. The relevance of the topics and the pin-points will make the book useful as a ready reference to students.

Macro Development Economics, J. S. Railkar, Sultan Chand & Sons, 1979, Price 17.50.

In this second edition of the book, which is intended for the undergraduate students of Economics of the University of Bombay, the author has revised some topics. The chapters include national income, determination of relative prices, income and employment, macro economic categories and goals, underdevelopment, capital formation, strategies of economic development and some important problems. The book is rich in content and lucid in presentation.

Pace-Setter District in Planning for Action

Michael Meacock*

One of the major psychological obstacles to political planning for action in India is sheer enormity of the country —a huge subcontinent spread thickly and haphazardly with a dense covering of villages, towns and cities.

We put forward certain basic concepts of physical habitation-planning based on a definition of ' community". This planning concept defiines a basic district-community unit, consisting of the city at its centre, and the dependent surrounding towns and villages This planning theory gives to each area a sense of community by nominating its community centre city (either actual, or growth-point), and by felating each town and village to its city centre, psychologically, commercially and culturally, and physically through newly oriented transport patterns

With this planning concept we can now see the entire nation as a coherent pattern of meaningful community-districts.

We are of course still faced with the psychologically insurmountable problem of India's size. How much easier it would be if we were dealing with a small city-state like Singapore But in fact we can now do just that, if we create and develop the concept of the Pace-setter Community District.

We have defined the District Community We must now select one fairly typical and centrally situated District, and develop it as the national Pace-setter.

The Pace-setter Community can now serve two essential functions. First, all our political tasks and problems - social, economic, geographical—now become manageable propositions For all we need do is to concentrate on this one Pace-setter Community. Get one right and the rest, with suitable assistance, must quickly accustom themselves to following. Second, our Pace-setter Community becomes a national "prototype machine". It is here, in the Pace-setter District, that we can concentrate all our skills and efforts; and we can continuously watch and monitor the results, so that if anything is not right we can set it right—if anything does not work, we can make it work, or change it. Forget the "enormous" problems of India; concentrate only on just one Pace-setter District—small, manageable, comprehensible. This is our laboratory—get this one right, and the rest of the nation can continuously follow.

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* Wales / G. B.

** This article is the fourth in the series of articles planned by the author. – Editor.

Of course we will need special task-forces to deal with special problems not found in the typical Pace-setter Community—problems which need special study, research and solutions such as the problems of desert areas, untamed rivers and areas subject to flooding, and the problems of oversized cities. But solutions to the majority of day-to-day economic, social and political problems can be developed and applied in the Pace-setter Community; it will then be necessary to establish a chain of communication so that others across the nation can observe, learn and follow—newspaper articles, books, films, broadcasts, and facilities for visits and study.

The Pace-setter Community must be a pace-setter in every possible way, where talent and initiative of every kind, domestic and foreign, should be concentrated. Some outstanding specific areas for development and leadership are as follows.

1. *Low-cost housing design.* The building trade is notorious even in developed countries as being relatively unproductive and time-wasting. This is largely if not wholly due to two characteristics: individual one-off buildings which do not have the economy of mass-production, and complete on-site construction which precludes the use of mechanized techniques and subjects the whole operation to the mercy of the weather. These two problems can both be overcome by the design and factory mass-production of simple housing components, which can be assembled on site requiring only basic foundation and services, with simple apparatus and skills. Low-cost standardized housing has been a traditional exercise for architectural students, and much good work has been done. That it has not been put to general use may in part be due to lack of channels for trial and subsequent propagation—which in fact is precisely what would be achieved through the Pace-setter Community concept. In considering low-cost standardized

housing, certain essentials must be borne in mind. Housing components must allow flexibility to suit different needs, size etc; designs must always allow for local climatic conditions and architectural traditions; components should be producable locally with local labour and materials. The arrangement of individual housing units into neighbourhood or village is also vitally important.

2. *Housing patterns*. By "housing patterns" is meant the arrangement of houses, access paths, open spaces, and commercial/industrial/recreational facilities—in other words, the "design" of villages, towns and cities. This is an area in which many errors have been made, and are still being made, in developed countries. Specifically, current urban design tends to lose the human scale, visual interest, and the feeling of belonging. So many towns and cities today are too impersonal, "designed" not in real-life three dimensions, but in two-dimensional neat geometric patterns on paper. This is an extensive area of error which developing countries would do well to avoid as expansion takes place. One reliable way of avoiding these pitfalls would be for planners to begin regarding their future residents as "customers", and treating them with the respect due to customers Try out new ideas on a small scale then ask the "customers" what they think. Too many housing developments in Britain have been designed by architects and planners who would never themselves want to live in them! It will be particularly difficult for architects and planners to respect their customers when their customers are poor slum-dwellers; but difficult or not, it must be done. (Recommended: A Study of the Winning Design in the International Competition for the Urban Environment in Developing Countries, reported fully in May 1976 issue of Architectural Record, Published by McGraw-Hill, New York).

3. *Transportation*. Urban design is also very much affected by transportation. Private individual (motor car) transport tends to open up and create sprawl, requiring large amounts of land for movement and parking. Public transport on the other hand allows compactness to be retained, with additional advantages of less land use, greater convenience of access and movement, less cost of running services such as water, drainage and sewage, and less cost of paving vast areas of roads. Specific modes of transport must also be considered—for example overground or underground—and considerations

of speed, cost, convenience and safety need to be researched and evaluated. The advantages of compact cities with pedestrian circulation and public transport have long been valued in many European cities ; the current energy shortages and costs have only served to reinforce these points

4. *Agricultural methods, management and organization.* Communities need to feed themselves, and each community needs its own agricultural services, as near self-supporting as climatic conditions will allow ; this ensures freshness and minimizes transportation costs National wage and price evaluation ensures equitable wages for agriculture as for industry. Agriculture must also be likened to industry in its need for efficiency in management and operation. For prosperity comes from efficient food production just as much as from efficient industrial production. Small family plots do not allow efficient use to machinery, fertilizer, irrigation schemes, and so on. This points to larger units. With wages, prices and conditions regulated reasonably fairly, problems of feudalism should not arise Agriculture thus becomes as industry, run efficiently, producing economically, with fair wages and conditions for workers. The Pace-setter Community will need to show the way in this important area.

5. *Industrial patterns.* Village-town-city : each has its capabilities in terms of industry—e g light industry for villages with little specialization, serving local needs including agriculture. In towns and cities industry can become more specialized as the selection of available skills grows larger. Distribution and marketing as between city-town-village is also important, in both directions. Villages need the products of towns and cities, but must also be able to sell to them without each producer needing to make a personal and time-consuming journey to the city. This point thus inter-connects with transport planning.

6. *Banking and finance.* We have established the principle of national overall economic guidelines, the concept of Standards in design, production and management, and of course the overall quantity of finance available nationally and regionally will also be established on a continuing basis. These three factors provide the guidance necessary for banking in providing finance for investment That however is just a potential—the conditions on which finance "can be

made available". But actuality requires positive action on the part of banks to ensure that these facilities are made known to those who could benefit from them; and if necessary bankers must go out and look for development/investment opportunities which will meet their criteria. Here again the Pace-setter Community will provide a vital test-bed which can be watched closely to ensure that the all-important functions of banking and investment are working effectively and to the maximum possible usefulness and benefit.

7. The villages need all sorts of services, and the villagers have the desire to work But who supplies the expertise and the initiative to get things going? We need to consider some kind of a Development Trust in each community, staffed by experienced administrators, to "get the ball rolling" and ensure proper continuation, maintenance and expansion of basic utilities and industries. (See Energy Policy for the Rural Third World by Arjun Makhijani, published by International Institute for Environment and Development, 27 Mortimer Street, London W1).

These and other important areas of economic and social needs and services must be developed in the Pace-setter Community by all the talent and initiative the nation has at its disposal Get one Pace-setter Community right, and the whole nation can follow.

Product Composition of Developing Countries' Merchandise Exports, 1977[1]

(per cent)

Product Group	To Industrial Countries	To Developing Countries[2]	Share of Product Group Going to Industrial Countries
Machinery and transport equipment	19.9	30.2	53.5[3]
Textile	10.2	16.3	48.4
Clothing	23.1	6.2	85.3
Chemicals	7.4	11.6	50.3
Iron and steel	3.0	5.1	49.6
Other manufactures	36.4	30.6	67.2
Total	100.0	100.0	62.4

1. UN classification (South Africa and most of Southern Europe are included in industrial countries).
2. Includes capital-surplus oil exporters.
3. About 80 per cent for electronics and electrical machinery. much lower shares for other products.

Data : World Bank, World Development Report, 1980

Public Distribution and the Price Line

Virendra Agarwala*

Whenever the Government fails to arrest galloping prices—which have crossed 21.7 percent in 1979-80—political leaders make it a point to express their view, which looks sensible to the layman, that public distribution is the most effective answer to contain price inflation. People get so confused that they do not appreciate that the leadership is talking of something which can hardly produce the desired results because its sucess depends on the State's capacity to procure goods at cheap prices, enabling it to supply them to the public on better than market terms, as also on its ability to subsidise such goods. Both these conditions can hardly be available on a long-term basis. Dual pricing policy has certainly produced this situation in respect of sugar. Those commodities that are imported and subsidised also fall in this category though a controversy is raging whether imported edible oils should be distributed though this channel.

The major defects of the public distribution system have been uneven statewise and regional distribution of shops, highly uneven pressure on these at different times and the failure to evolve a consistent system and to ensure an even flow of commodities to them. The ration shopkeepers, particularly, have no incentive to make the system succeed because their margin of profit is so small that it hardly induces them to operate efficiently. The system as such thus can hardly be compared with open market operations.

It is unfortunate that politicians and bureaucrats, who have acquired vested interests in creating scarcities of essential goods, do not consider that only a higher production of goods or controlled money supply can help in holding the price line. The Union Budget shows that the Congress(I) Government stands for a growing budgetary deficit, punitive tax structure and stagnant production because they have done nothing to revive the economy. The political leadership also refuses to appreciate that price inflation has been largely responsible for accentuating poverty and growing disparities. They prefer to concentrate on bureaucratisation of distribution because they seem convinced that they will have production large enough to go round as well as to maintain the prices at a reasonable level. The crucial question being asked is whether Mrs. Gandhi's Government has acquired the required capacity to contain the price inflation. The Prime Minister feels that her main task is to strengthen and streamline the public distribution system which will look after the scarcities of essential items in several parts of the country. How can she afford to be so naive as to believe it ?

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* New Delhi.

It be may a good talking point but in spite of the Prime Minister now lending her personal authority to the promise, there is no evidence as yet of any practical steps being taken in this direction. The manner in which supplies of certain crucial commodities and their prices have been tinkered with has only worsened the situation. The reason for the cut in the release of sugar last month, both for public distribution and open market sales, remains a closely guarded secret of the Union Ministry of Agriculture. But it has undoubtedly played a major part in aggravating scarcity and making sugar prices zoom upward. In the case of diesel, kerosene and other petroleum products, again the attempts of some State Governments to regulate and partially ration their distribution have been frowned upon by the Union Ministry of Petroleum which has found it more attractive to project imports of all these products at any cost as the panacea to the problem. With the cost of most of these commodities being much higher than domestic cost of production and prices, it is difficult to see how these imports would help the consumer unless the Government decide to subsidise them heavily for all times to come. The public distribution system is sure to exercise an extremely deleterious influence on the efficiency of domestic production in the long run, in addition to eroding foreign exchange resources for development

The Centre's increasing concern over the rising prices of essential commodities and the decision to take drastic action to make available sugar, kerosene, diesel and other essential commodities at reasonable prices are laudable. The Centre has recently reminded the State Governments of their responsibility to undertake widespread dehoarding operations as well as to make fuller use of the Essential Commodities Act which can produce results if properly acted upon. It is unfortunate that the State Governments have not yet utilised the wide ranging powers under the Prevention of Black Marketing and Maintenance of Essential Supplies Act to check soaring prices. But it also needs to be appreciated that the conditions prevailing today are most favourable for inflation.

There has been a setback in agricultural production due to drought, and a shortfall in industrial production due to man made causes. Why should capacity utilisation of thermal power stations fall to about 40 per cent from 50 per cent when hydel reservoirs are drying up because of inadequate rains ? Why should production of coal decline when imported diesel, kerosene and other fuels are getting costlier and more scarce ? Why should the Railways not fully utilise their capacity when road transport is more costly ? The Government's fiscal monetary and credit policies, particularly the operational inefficiency of the public sector enterprises, are wholly responsible for creating scarcities of essential goods and for price inflation engulfing the whole nation.

The Congress(I) Government has conceded that the trend of continuing price rise has persisted even after they came into office but it has been slower than in the last seven months of Lok Dal rule in 1979. The Congress(I) Government has ordered large imports of all essentials, including cement, edible oil and petroleum products, to met the shortages at home. But problems created by shortfalls in domestic production get accentuated by what is called 'imported' inflation. So long as their is a need to import, no Government will be able to do anything about imported inflation. It is possible to subsidise a particular commodity but this leads to the inflationary price rise of other commodities. The total burden of subsidise on certain petroleum products, fertilisers and foodgrains is over Rs. 16,000 crore per annum. But other commodities must be bearing more than double the burden of this in the form of increased prices. What we urgently need today is to raise the indigenous production of all such commodities of which there is shortfall. The Goverment should grant fiscal concessions, liberal credit at concessional rates and easy supply of inputs. These can go a

(Continued on Page 243)

Growth and Import Substitution in Indian Economy

Brij Mohan Sharma*

The policy of import substitution must be clearly differentiated from that of developmental protection. It is true that in most of the economies some trade possibility [present and prospective] may exist and hence the policy of import substitution. Infant industries may be growing side by side with the purely import substituting industries. Usually the extension of the argument of developmental protection to the essentially import substituting activities makes the trade restrictions more palatable. But this, at the same time, clouds the issues of efficiency of costs. Industries covered by developmental protection must be so selected as to be potentially efficient and hence must be prepared to face the competition when the protection is removed after the specified length of time.[1] The industries which are unable to face competition, it would be advisable to close them down.

Implications of Import Substitution

For a given economy, the cost of attaining higher degree of self-sufficiency (in terms of loss of efficiency) is likely to be higher than that of attaining a lower degree of self-sufficiency. The small economies are generally likely to have higher ratio of exports to national income than the larger ones. At the same time the resource base of the small economies is likely to be narrow and not particularly suited to produce many commodities as are required for self-reliance. A large country is likely to have lower initial ratio of exports to income and thus would be required to attain a higher degree of self-reliance With its more diversified resource pattern, balanced production possibilities are more likely to be inherent in such an economy. This would make the burden of

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higher self-sufficiency relatively less oppressive. A high degree of self-sufficiency required in a large country would put greater weight to self-sufficiency consideration than to the efficiency consideration in the allocation of resources.

Defining Import Substitution

At this stage, it is inevitable to distinguish between the import substitution[2] taking place as a result of economic growth and of the spread of technology and knowledge. With the spread of knowledge and technology, comparative cost differentials is likely to be reduced to that extent. Moreover, economic growth confers certain advantages on the economy in respect of experience, development of skills etc. Both these positive advantages would provide a country comparatively more economic channels of production and the cost of production of such goods could be minimized [3]

Generally, import substitution is measured in three ways.[4]

i) Ratio of imports to national income
ii) Ratio of particular imports to total exports
iii) Ratio of imports of a commodity to its total availability.

The Ratio of Imports to National Income

The common measure of import substitution takes the extent of change in the ratio of imports to national income. The ratio, in fact, gives the import dependence of the economy.[5] The relative dependence of the economy (in terms of imports) is influenced by various factors. And import substitution and growth in income would go at a different rate varying with the level and structure of imports, and import policy.[6] The impact of import substitution is likely to exert downward pressure on the imports, though the process itself may require certain new imports causing the imports to go up, at least in the initial stages. The net impact of the imports cannot always be judged a priori. The growth of income may be such that the domestic sector of the economy may be growing than other sectors. In such a situation, national income may go up without causing any change in the imports. The ratio M/Y in this situation would decline indicating import substitution though at the same time import-production-consumption relationship in respect of imported commodities may be left unchanged.[7]

Ratio of Particular Imports to Total Imports

Another measure of import substitution is ratio of particular imports to total imports.[8] As mentioned earlier, the total imports of commodities may be affected not only by import substitution but also by the import policy, etc. The quantum of total imports may change without affecting the import-production-consumption relationship of the commodity under consideration. Hence, the nature of this measure in quantifying import-substitution would seem to be doubtful.

Ratio of Import of a Commodity to its Total Availability

A more frequently used measure of import substitution treats the change in the ratio of M/T as a measure of import-substitution. This measure is superior to one discussed earlier as it pertains to the actual commodity imported and its production. This measure also suffers from the other shortcomings discussed viz, mixing up the results of import-policy and import substitution.

Limitations of the Import-Substitution Measures

It must be recognised that these measures aim only at quantifying the reduction in the likely quantum of imports consequent upon the expansion of the output of the competing home industries. It does not take into account changes in other imports and the effect of foreign exchange position brought about by undertaking of such production programmes.[9] The policy of import substitution affects not only the quantum of imports and the foreign exchange situation but also the rate and pattern of development itself. Hence its complete assessment would require its overall impact on the rate and structure of development.[10]

Effects on Growth

The process of import-substitution has its impact on the growth rate of developing economies As it has been said earlier that restrictive import policy serves the purposes in developing economies. First, it decides and selects not to spend its limited foreign exchange on certain non-essential imports from development viewpoint, and seeks to divert the same foreign exchange resources to essential developmental imports. Secondly, it chooses to encourage the domestic production of the import substituting goods by banning/restricting their imports.[11]

To achieve a higher rate of growth a net addition to investment is required. The latter needs an increase in domestic savings unless the imported capital goods are financed by foreign capital inflow.[12] If the total consumer expenditure (including imported products too) is not reduced then, with the given domestic investment, pressures on resources would cause the rise in prices. Hence, in order that the capital formation is accelerated, a rigorous control on the consumer expenditure is essential If foreign trade is to be used to step up the rate of capital formation, the growth in consumer expenditure must be so controlled as to remain within the limits specified by the incremental savings ratio planned for. Thus, the impact of import substitution policy on growth rate is not necessarily always favourable in the absence of complementary measures to restrict domestic absorption. It is also sometimes observed that the very import policy may encourage consumption and retard and slacken the process and also the savings-investment mechanism in the developing economy.

The import substitution policy is also expected to hamper growth rate by adversely affecting the exports of the economy. Indigenous production of many commodities is likely to consume the raw materials which were exported otherwise. In this case the exports may be affected, although the growth rate as such need not be affected inasmuch as domestic production from these raw materials is likely to reduce the imports of the same and is thus likely that the emphasis on domestic industrialization and import substitution may lead to the neglect of agriculture and traditional export sector. Import policy may also affect exports and growth in a yet another way. Usually it is contended that the developmental activities without adequate control of national expenditure lead to inflation and also to the diversion of exports to internal markets. Inflationary pressures may raise the costs of production in the export industries and lower their competitiveness.

Table I shows a trend position of both these types of ratios in Indian economy for the period of 1970-71 to 1976-77. One more measure of import substitution is ratio of import of a commodity(M_{i}) to its total domestic availability. This has been shown

Table-I

Import Substitution in India Economy

Commodity Group		Year 1970-71	1972-73	1973-74	1974-75	1975-76	1976-77
1. Food and live animals	(a)	0.008	0.004	0.011	0.014	0.023	0.015
	(b)	0.166	0.086	0.0185	0.0189	0.271	0.190
2. Crude materials, inedible except fuels	(a)	0.006	0.005	0.004	0.004	0.004	0.005
	(b)	0.122	0.102	0.062	0.049	0.040	0.068
3. Mineral fuels, lubricants and related materials	(a)	0.004	0.005	0.011	0.019	0.020	0.022
	(b)	0.083	0.109	0.190	0.256	0.233	0.278
4. Animal and vegetable oils and fats	(a)	0.001	0.001	0.001	0.001	0.000	0.002
	(b)	0.023	0.013	0.022	0.008	0.003	0.023
5. Chemicals	(a)	0.006	0.006	0.007	0.012	0.013	0.007
	(b)	0.118	0.139	0.121	0.162	0.144	0.089
6. Manufactured goods	(a)	0.010	0.011	0.011	0.013	0.010	0.010
	(b)	0.211	0.241	0.182	0.171	0.118	0.133
7. Machinery and transport equipment	(a)	0.011	0.013	0.013	0.012	0.015	0.015
	(b)	0.242	0.284	0.221	0.154	0.118	0.193
8. Miscelleaneous manufactured goods	(a)	0.001	0.001	0.001	0.001	0.001	0.001
	(b)	0.020	0.020	0.014	0.010	0.010	0.012
9. Total imports	(a)	0.247	0.046	0.058	0.076	0.087	0.079
	(b)	—	—	—	—	—	—

(a) = Import dependence (M_i/M).

(b) = Import substitution (M_i/M).

in Table II. These measures of import substitution aim only at quantifying the reduction in the likely quantum of imports affecting the industries. It does not take into account the change in other imports and the effect on foreign exchange situation brought about by such production programmes.

In Table I, import dependence of the Indian economy has been depicted. Evident from the structural and institutional nature of Indian economy, a developing one, that import structure comprises food and live-animals as major import items. Total import dependence of the economy was 4.7 per cent in the year 1970-71, which increased to 7.9 per cent in 1976-77. Of the national income, in the year 1970-71, there was 0.8 per cent expenditure on food and live animals imports, which went up to 1.5 per cent in 1976-77. Figures shown in the brackets, in Table I, indicate a self-explanatory trend of import-substitution in the form of M_i/M ratio.

Import-substitution as a particular type of resource allocation mechanism can help the economy to circumvent the foreign exchange constraint in the growth, and accelerate it only to the extent that it allocates resources efficiency. The policy of import-substitution is justified on economic considerations only when it is carried up to such a point and so long as is required by the nature of export prospects A decision to follow a particular strategy in the light of the opportunities and the limitations obtaining in an economy must be considered as of vital importance in determining the size and shape of the future development. The determination of how, and up to what point it will be economically expedient to reduce the import. coefficient and the adoption of basic decisions with respect to the reallocation of resources so that exports may be expanded and diversified with due consideration of the various alternatives for optimum use of resources consitute the cornerstone of a development policy.

Surprisingly enough the resort to the policy of import substitution in the Indian Plans has neither been adequately explained nor rationally justified. Apart from stray references the Plan documents do not contain detailed and scientific discussion about the various alternatives or any arguments explaining the choice of the strategy of import substitution. Provisions for replacing many of the imports by the competing indigenous productions have been included in all the three plans in pursuance of such an objective. In the Plan documents, one comes across statements emphasising the importance and the urgency of import substitution measures especially in the field of basic and heavy industries. For instance, it is maintained that one of the important aims is to make India independent, as quickly as possible, of foreign imports of producer goods.

Imports of capital goods resulted to a large extent from the implementation of Mahalanobis strategy But up to the Third Plan, inside the capital goods sector, there seems to have been concentration on machine tools and there is not much of it on the rest of the capital goods sector. In the course of the Fourth Plan significant achievements have been made in fertilizers, steel (including alloy and special steel) instrumentation, transformers, boilers, turbines and petrochemicals. Since cost and quality considerations have become secondary there has come up an industrial structure characterised by under utilization of capacity and neglect of overseas markets. The chocking of maintenance imports has been another cause for sub-optimum utilization. Across the board import-substitution has made the economy even more dependent on imports than before Many of the links of this long chain are shaky and have an unhealthy impact on balance of payments.

Table II shows the share of imports (itemwise) in total estimated supplies. In case of food-grains, percentage of imports was increasing till 1975-76, but in 1976-77 it declined from 6.4 per cent to 4 1. Raw cotton showed a gradual decline from 10 per cent in 1970-71 to 6.8 per cent in 1976-77. Textile-machinery, iron and steel, aluminium, soda-ash, newsprint, aluminium sulphate and man-made fibres and yarn showed a considerable decline in percentage of imports to total estimated supplies of those mentioned commodities But, as noted in Table I, studied group-wise, there was no significant fall in the import dependency of our economy.

Under developmental protection policy, the import substitution has been automatic and anticipatory without regard for cost and without requiring it to meet explicitly formulated economic criteria. While consumer goods industries have faced competition the industries like chemicals, metal (aluminium tools, and special steel, antimony), machinery, electric motors, and transformers have not faced any competition worth the name. There have been

Table-II

Share of Imports in Total Estimated Supplies

Commodity	Unit	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
1. Foodgrains	Million tonnes	(a) 104.8	103.1	104.2	114.3	116.8	122.5
		(b) 1 8	0.8	4.3	4 9	6.4	4.1
2. Sugar mill machinery	Rs. lakhs	(a) 1772	1828	2236	2705	3307	4013
		(b) 0.1	0.4	0.3	0.2	0.2	0.1
3. Iron and steel	('000 tones)	(a) 5864	6242	5482	6110	7577	7811
		(b) 22.9	19.6	18.5	19.6	7.6	5.1
4. Aluminium	(do)	(a) 203.2	175.4	149.5	128.0	194.6	209.9
		(b) 10.3	1.0	1.1	1.1	3.8	0.6
5. Soda Ash	(do)	(a) 500.1	486.0	483.0	519.0	555.0	563.0
		(b) 2.2	0.6	0.5	0.6	neg.	Nil
6. Caustic soda	(do)	(a) 388.7	391.8	424.5	427.2	467.0	505.0
		(b) 1.3	0 2	1·3	0.3	neg.	nil
7. Newsprint	(do)	(a) 247	194	166	205	154	183
		(b) 83.8	79.2	70 5	68.8	65.6	68.4

(a) Total estimated supplies.
(b) Percentages of imports to total estimated supplies.

Source : Economic Survey-1977-78, Govt. of India.

no regard for international competitiveness. Production has been spread over the whole range of luxury items like radio, transistor, refrigerator, automobiles, scooter, clocks, fans and stoves, and it is difficult to think of a commodity whose imports have not been stopped and domestic production has not started.

There have been successful attempts to replace copper and brass by aluminium, zinc by plastics and aluminium, tin by glass, ceramics and paper, lead by plastics and synthetics resins, and lead sheathing by aluminium sheathing Antimony has been replaced by titanium, cobalt by manganese and bronze by aluminium alloy. Use of nickel and chromium in electroplating and galvanizing is being replaced by anti corrosive and other paints.

Near self-sufficiency has been attained in soda-ash and caustic soda. There has been much growth in the output of hydro-chloric acid. Capacity of petroleum refining has increased. Casting and forging of heavy engineering, electrical, and electronic equipment for various types of plans is being done.

Summing up

It has often been said that the prospective comparative advantage for India is likely to lie in a production structure developed on the lines of import substitution. This would make the economy better and able to compete and export at a later date. Therefore, the process of import substitution would reveal a new scale of comparative advantage as the production structure becomes more diversified. Thus, while the Indian economy would export/import growing amounts of large variety of goods, the general drift of the economy would be towards a well-diversified structure of production. For instance, the Third Plan notes India's potential capacity to produce steel and other basic materials relativly cheaply and that the large and expanding domestic market places her in a favourable position to produce machinery and a large range of chemcials and engineering and electrical goods needed for development In turn this will stimulate the gowth of medium and small industries and expand employment, both in urban and in rural areas. Thus, it would be possible to build up an integrated industrial structure and expand industral production efficiency along the lines of real comparative advantage. This reasoning in itself need not be objected to. However, as the domestic costs of production are well above their international price, given the existing set up, it seems extremely doubtful if any product based on these industries could be competitively produced at least for a long time to come. Secondly, granting that at some future date, the production structure developed along the lines of import substitution is likely to reveal a new scale of real comparative advantage, two further conditions must be satisfied to justify such a planning. The required foreign exchange must be avilable in the intermediate period to sustain such a programme of import substitution. If it is not available then a change in the programme with some more emphasis on the exports is necessary. This would postpone the day when new scale of real comparative advantage is attained but the programme has a better chance of being implemented unhaunted by the fear of foreign exchange shortage. This fallacy is inherent in the entire planning horizon of our country. Coupled with these shortcomings in the overall approach to plans there have been the shortcomings in the implementation of the Plans.

Since there is inconsistency in objectives of planning these have to be specified and trade-offs between them to be worked out so that a consistent set of objectives is chosen. The main objective of Indian planning is the speedy growth of national income. The point is to emphasise on self-reliance yielding a need for import substitution but self-sufficiency has hardly been integrated with overall industrialization policy of the country.

Footnotes and References

1. Those industries essentially developed in consideration of self-sufficiency may not be able to face competition at any time (at least some of them).
2. See Diaz-Alejandro, C.F.—"On the Import Intensity of Import Substitution, Kyklos, 18, 1965, pp 495-509 ; and Hoffman, L. "The Import Intensity of Import Substitution ; Ceteris paribus vs. Mutatis mutandis", Kyklos, 19, 1966.
3. Chenery, H.B.—"Comparative Advantage and Development Policy", American Economic Review, 1966.
4. In fact, a more suitable measure of import substitution should be related with the growth in the import-substituting output. This is so because the process of import-substitution is under-

taken to meet indigenous demand for imports. This will happen to the extent that the import competing output is domestically produced. Alternatively, in the absence of this indigenous output coming forth, the imports of the same materials of the same magnitude would have been necessary. Hence, the extent of import-substitution achieved should be measured by the quantum of output produced by import competing industries. This, however, assumes that overall growth of the import competing output is due only to the policy of import substitution and in the absence of such a deliberate policy these industries would not have been developed.

5. Import dependence is the outcome of the various factors operating in the economy having bearing on its imports and the import-substitution is but one of such factors.
6. Import dependence of an economy, at any point of time, is the outcome of the interaction of three forces and hence a change in it cannot be attributed to the process of import-substitution alone.
7. Or, in other words, import substitution is measured by a downward change in the relative position of an import commodity in the total imports
8. Usually the process of import substitution, as contrasted with that of the import restrictions, creates its own imports and foreign exchange requiremennts.
9. See Chenery, ibid.
10. This does not, however, itself guarentee the achievement of the import policy objectives, viz, accelerating the capital accumulation and development process.
11. See Chenery, H.B. & McEwan E., "Optimal Patterns of Growth and Aid : The Case of Pakistan", Pakistan Development Review, Summer, 1966 ; Chenery, H.B., and Strout, A.M, "Foreign Assistance and Economic Development", American Economic Review, 1966.
12. It is all the more essential to control the expenditure on the relatively less essential consumer manufactures since relatively more stringent restrictions (which also means relatively greater protection) placed on their imports are bound to give greater spurt to their production.

Evaluation Of Agricultural Research and Development : Fundamental Issues

F. S. Chaudhary and S. D. Chamola*

Introduction

Organised research has become an integral part of the process of modernizing agriculture and massive funds are being invested annually on agricultural research. Scientific technology as applied to agriculture has played an important role in modernizing agriculture for the overall development of a country. The subject of evaluation of agricultural projects has now become an important factor of any development programme, especially in the developing countries of the world. The main reason may be that the advanced countries and other international development agencies like World Bank insist before any financial aid is released to a project in developing countries that they must be ensured of the rate of return and its social profitability. In these days agriculture is considered as one of the big industries and likwise these agencies have been investing a good amount in agricultural research. A number of developing countries have made remarkable progress in strengthening national research accountability and it has become a primary issue to measure the component of research and development. But the fundamental issues of measurements of returns from investment in agricultural research and development are beset with great difficulties, both conceptual and practical.

This massive investment on agricultural research raises a number of questions regarding management and administration of research : the pay off from agricultural research, the evaluation of agricultural research, the technology evolved by the agricutural research so far and its impact on other social and economic issues.

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All these questions require fresh, free and fine thinking if the agricultural research system is to serve a useful purpose. In such a short paper like this, it is neither possible nor justifiable to answer all these questions. Here a modest attempt has been made to discuss some main and fundamental issues. Therefore, the objectives of this paper may be :

(1) to explain the need and direction in which agricultural research should go,

(2) to measure the returns from agricultural research, and

(3) to propose a methodology for evaluaton of an agricultural research project.

Need And Direction For Agricultural Research

The pressure of human population has been increasing year by year and tremendously and the day is not far off when the means of subsistence will not suffice with this population explosion and population will outstrip food supplies with all its evil consequences of malnutrition, political unstability and international conflicts. Thus there is more need of agricultural research these days than it was in the past and in coming times it will grow more and more.

The International Food Research Institute and the Food and Agriculture Organization (FAO) have projected a gloomy picture of the food supply and world population in coming years. It has been predicted that the world demand for food will nearly double by the end of this century. During the final quarter of century the world population is estimated to increase by 58%. In 1950 the world population was 2.5 billion and in 1975 it rose to 4.00 billion. By the end of this century the total world population is estimated at 6.3 billion. If a comparative study of the world population and food situation is made, it can be seen easily that within 25 years from 1950 to 1975 the population pressure increased by 59% whereas the world foodgrains increased by 97% with the result that food deficit and starvation at large scale were warded off temporarily. But it will be very pertinent to examine that the rapid increase in food grain production was made due to the fact that more and more crop lands were brought under plough while the increase in productivity per unit of land was not so significant. Availability of crop land comes to a fixed value and thus the direction of future research will be on increasing productivity per unit of land. Since the crop land is expected to increase little, emphasis will have to be laid on increase in production per hectare. This is possible only when intensive research work will be done in agricultural research. Thus agricultural research will have to be paid considerable attention as the important contributor to agricultural production.

The thinning crop land for future increase in agricultural production is attributable to many factors such as urban growth, acquisition of agricultural land for roads, railways, airstrips, industrial development, residential accommodations etc. Thus the agricultural research will have to be directed towards evolving a technology for land-saving rather than land-using. The evolution of land-sowing technology will pave a path for intensive researches in developing high-yielding varieties in hitherto unexplored crops, agronomic research to support new cropping systems, soil and water management research, research in fodders and feeds, research in control of insect, pests and diseases, utilization and cycling of wastes, scientific management of small holdings, research in farm machinery and implements etc.[1]

Apart from shrinking crop land, another problem is also cropping up due to constant use of such land, the natural soil fertility is now decreasing. As a result, severe soil erosion, water logging, salinization of irrigated land and desertification are rapidly increasing. This thinning lays of top soil is reducing the soil fertility. Documents prepared for the U.N. Conference on Desertification in 1977 show that natural soil fertility is now declining on an estimated 20% of crop land of the world. Some 630 million people live in arid or semi-arid areas and about 78 million people live on lands rendered useless by dump formations, changes in vegetation and salt encrustations. This problem is also acute in India where large parts of Rajasthan, Gujarat and Haryana come under desert and it has been estimated that 75% of the country is dryland agriculture, unless effective measures are taken to check the gradual erosion of top soil, humanity has to face dire consequence in store. Future agricultural research will have to tackle this challenge of maintaining

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1. Inaugural address by F. A. Ahmed, then President of India, in the National Symposium on Research and Development since Indpendence held in New Delhi, ICAR, March. 4-12, 1973.

the soil nutrients. Here the need is to evolve some specific technology for soil productivity management, amelioration of deteriorated soil for dry farming, water logging, soil erosion, salinization and desertification conditions.

The importance of water for agriculture can never be ignored. With the growth in human and animal population combined with increased use of water for increasing agricultural production, there will be competition among man, animal and plants for scarce water resources. At present under Indian monsoon, there is the paradox of flood and drought occurring at the same time in different parts of the country. For this some research will have to be conducted on water-harvesting technology. A new direction will have to be created for optimum utilization of surface water, ground water and sewage water. For combating floods and droughts, a planned research is required and to understand them some studies are also essentially to be undertaken towards their frequency, periodicity and intensity.

Areas and Priorities of Agricultural Research

Most of the underdeveloped countries are characterized by paucity of funds and limited resources in terms of technical man power and material. Therefore, priority areas in research will have to be chosen by taking these limitations and scarcity of resources into consideration. To identify the areas of research priority some attempts have been made by (1) The National Symposium on Agricultural Research and Development since Independence, (2) The National Commission on Agriculture[2] and (3) The Review Committee on Agricultural Universities.[3]

The National Symposium on Agricultural Research and Development since Independence did not make any package of recommendations, only numerous areas were touched and the individual scientists in various fields made their own observations regarding future priorities in agricultural research of their disciplines. No consolidated report was prepared by taking these overall views.

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[2] National Commission on Agriculture-1976, Part XI, pp. 111 Ministry of Agriculture and Irrigation, Govt. of India.

[3] Report of the Review Committee on Agricultural Universites, ICAR, New Delhi, 1978, p.p. 33.

The National Commission on Agriculture made comprehensive recommendations and reported that in future research efforts should be directed more specifically according to areas of priority. The Review Committee on Agricultural Universities also suggested areas of research priority allocations.

Investment in Agricultural Research

Agricultural development involves many aspects of a society such as social, economical, scientific, technical, industrial etc. and thus it is imperative that inter-disciplinary research system should be built. Now the question is how much such an investment in agricultural research pays back to the society and how the measurement of profitability to society should be made. Before going to this discussion it will be more pertinent to discuss the rate and adequacy of investment in agricultural research. Evanson and Kislev (1975) in their data of survey of international investment in agricultural research have brought out some revealing facts. The world total expenditure on research in 1965 was 1.1 billion dollars per annum with an estimate of 60,000 scientists engaged in research activity. Out of the total 1.1 billion dollars on agricultural research, the shares of developed and developing countries were 986 million dollars and 127 million dollars respectively. For research scientists the numbers were 49,000 and 10,000 respectively. Thus it shows that there was a very significant difference between developed and developing countries and this portion is miserable considering that 75% of the world population live in developing countries.

Further, the comparative statistics reveal that research expenditure on agricultural research as percentage value of agricultural production was 0.874 and 0.259 respectively for the developed and developing countries. Similarly the data regarding expenditure per farm per scientist reflect vast differences between the developed and developing countries as the developed countries engage more than double number of scientists per dollar worth of production than do the develoing countries despite the fact that the scientists' salaries are nearly 60% higher in the developing countries. By all measures the developing countries are investing less in agricultural research than desired.

In 1973, the 17th session of the Conference of FAO gave a point of recognition and recommended that expenditure on research and development should attain a minimum average level equivalent to ½% of their gross national production. None the less, there is awareness in these countries for increasing their share for agricultural research. Contrary to the traditionally held view that returns from investment in agricultural research are not high, almost all investigations reported high returns. The attractive rates of returns have enabled national and international agricultural research systems to convince policy makers to allocate more resources to agricultural research. Griliches (1958) has recorded 35% to 40% annual returns for hybrid corn in USA during the period 1949 to 1959. Similar estimates for major crops are available for most of the developed countries. In India such studies have been made and fairly reliable estimates have been given by Evanson and Jha (1973) Kahlon et.al. (1975) and Bal and Kahlon (1977). Returns to investment in Indian Agricultural Research on the basis of these studies may be given as below :

Study	Period	Return to one rupee research investment	Time-lag	Internal Rate of return
Evanson & Jha	1953-54 to 1970-71	10.88	8	50
Kahlon, et al.	1960-61 to 1972-73	11.61	5	63.3
Bal & Kahlon	1967-68 to 1972-73	14.91	5	71.70

Though these estimates are not comparable as they differ in time, variables and methodology yet all of them suggest that research pay-offs are high in agricultural sector. Similar studies are also available for some typical types in agricultural sector concluding the fact that agricultural research investments contribute significantly. The exactness in the rates of return is quite cumbersome and it is pretty difficult to measure, however, if more accurate rates of return are to be achieved by

(1) improvement in the quality of data on research investment ;
(2) improvement in time series data for prices and quality of inputs etc ;
(3) account for social benefits due to agricultural research and development.

(4) account for spill over effect due to transfer of research technology from one state to the other.

Evaluation of Agricultural Research & Development

As pointed out earlier, some studies have been undertaken to work out the rate of return from agricultural research investment. Scientists are unanimous about the point that so far no methodology of evaluation, which is universally accepted, has been evolved and the main reason behind it is that agricultural research is a complex and interrelated system, affected to a great extent by multiplicity of physical, biological and social causes. Nevertheless there is an urgent need of evolving the criteria, methods and techniques which should be acceptable on all occasions. Economists and statisticians should jointly devote to it so that some indicators may be developed in the light of the following facts :

(1) Objective of evaluation.
(2) Degree of human welfare/social benefits.
(3) Optimal decision about allocation of resources.
(4) Impact on economic and social status of agricultural classes.
(5) Increase in consumer/producer surpluses.
(6) Factor and production analysis.
(7) Probability of success and optimalization of research.

Though it may not be possible to quantify exactly the results of an agricultural research but the scientists should make judicious use of their techniques so that a optimal projection of all possible benefits and costs may be made. Such projections may be helpful for preparing guidelines to the planners for any future allocation of funds.

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(Continued from Page 224)

long way not only to curtail imports but also to eliminate subsidies altogether. This is the need of the hour rather than to depend entirely on liberal imports of these essential commodities at subsidised rates.

Public distribution cannot be strengthened without assured supplies. The Centre's own performance in this respect has been far from satisfactory. It has failed to supply the allotted quotas of levy sugar to the States as a result of which most of them have failed to arrange for its supply through fair price shops. The supply of diesel and kerosene has also been below the allotted quotas, particularly to such areas which have had drought conditions. The Petroleum Ministry has raised their quotas to the States by about 10 percent. What is urgently needed is to so maintain their supplies that no one could take undue advantage of the shortages. In fact, movement of goods is the main constraint and this is the most important reason for the shortages. It is the primary responsibility of the Government to improve the performance of the Railways. The Government has failed miserably to manage such industries which have either been nationalised or have been set up in the public sector. They are incurring heavy losses and the people are being taxed for their inefficient functioning. Public distribution can be expanded in urban areas, more so in ruler areas, but at what cost ? This has not yet been calculated.

The public distribution system can play a vital role when essential commodities are short. It is unfortunate that the goods supplied to fair price shops find their way to the black market with the result that they are seldom available at these shops. Secondly, this system can never succeed in rural areas. It is a hard fact that though sugar is allotted for rural areas it never reaches the rural people and is sold at black-market price in urban areas. The problem of bogus ration cards has further complicated matters because it builds artifical demand when supply continues to remain short. Bureaucracy has been found to be so corrupt that it can hardly be treated with the responsibility of distribution of scarce goods through fair price shops. It is true that we have succeeded in setting up a network of fair price shops throughout the country but these have become centres of corruption and give a bad name to the entire public distribution system, on which we are depending to deliver the goods.

Is the public distribution system viable to meet the total requirements of the entire population ? There are 2,38.879 fair price shops to cover a population of 5,990 lakhs. At the moment the systen has been found effective only in respect of edible oils, kerosene and sugar in metropolitan towns while foodgrains are so freely available in the open market at comparable price that no one bothers to make fuller use of the system. But there are serious shortages of kerosene, diesel edible oils and sugar and the Government has found itself unable to procure the required quotas for the States to meet their demand. If these goods are not available at ration shops, it simply implies that the system has failed to operate. The Government of West Bengal has claimed that the system is not working to its satisfaction. When essential goods are really in short supply, controls and distribution arrangements under the official aegis only serve to divert them into the black market.

The Food Corporation spends more than Rs. 45 to handle a quintal of foodgrains while the corresponding figure for a trader is often as low as Rs 3. It is equally true that public distribution depends entirely on imports of edible oils and kerosene and the Central quotas of sugar to the State. It is surpising that the Centre has not yet calculated the demand of various commodities in various States and allotted quotas on a pro rata basis. How can the Centre be expected to meet the requirements of various States when these commodities are really scarce in the country ? Whenever the Government has played the role of a trader it has created serious complications. Public distribution has created further scarcity of essential goods which are already in short supply and has thus generated more black money. The Congress(I) leadership is rapidly losing its credibility because it has not yet found an effective answer to resolve the crisis.

It is neither public distribution nor major credit curbs but rationalisation of the tax structure, bridging of the budgetary deficit by reducing subsidise, curtailment of Government's unproductive expenditure, adequate return from the public sector units and acceleration of the pace of economic growth by eliminating regulatory controls and simplifying the licensing procedures and controls on monetary expansion that can go a long way to hold the price line.

These measures are well known and suported by those who hold the economic ministries but they lack political will and determination to take drastic and revolutionary steps to free the economy from the bureaucratic controls which are wholly responsible for price inflation. This is widely appreciated but we lack courage to acknowledge it.

[See page 247]

Table I: Expected Yields, Average Physical Productivity and Marginal Physical Productivity Corresponding to Different Levels of Nitrogenous Fertilizer (In the Form of Nutrient Contents)

Level of Nitrogen	Derived Yield Kg /hec.	Average Productivity (Kgs.)	Marginal Physical Productivity (Kgs.)
0	595.38	—	11.1787
10	704.34	70.43	10.6147
40	997.41	24.99	8.9227
70	1239.70	17.71	7.2267
100	1431.25	14.31	5.5387
130	1572.03	12.09	3.8467
140	1607.68	11.48	3.2827
150	1637.68	10.72	2.7187
160	1662.05	10.39	2.1547
170	1680.77	9.88	1.5907
180	1693.88	9.41	1.0267
190	1701.31	8.95	0.4627
200	1703.12	8.52	—0.1013

Economic Rationality in the Use of Nitrogenous Fertilizer For Raya crop (Brassica Juncea) in the Punjab

Inder Sain*, Tirath Singh* and J. S. Saini*

The new farm technology based on the rational use of water, fertilizer and seed has been reported to be conducive to high yields in view of their positive relationship. The use of fertilizer (which is an important ingredient of the new farm technolygy) is subject to much fluctuation due to frequent changes in its prices. The recent hike in prices of fertilizer has stimulated to study the new input-output relationship in an important cash crop of oilseeds in the Punjab since it stipulates a shift in the price parity of input and output resulting in a new economic equilibrium.

The data used in the analysis was obtained from the experiments conducted at the Punjab Agricultural University's regional research station, Samrala, during the years 1975-76 and 1976-77 with four prevailing varieties of the crop in the state and five equidistant levels of nitrogenous fertilizer viz., 0, 40, 80 and 120 kg. per hectare. Since, the varietal differences to fertilizer response were non significant during both the years, the data were pooled and the pooled physical input-output data of the experiment were then fitted into a quadratic function of the type

$$Y = a + b\_ + cx^2$$

Where :

Y = The expected yield corresponding to a given level of independent variable X.

a = The expected yield without the application of nitrogenous fertilizer.

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b = Coefficient determining the rate of increase in yield with per kg. increase of nutrient content in nitrogenous fertilizer.

c = Coefficient determining the rate of diminishing returns with per kg. increase of nutrient content in nitrogenous fertilizer.

The quadratic functional relationship was considered to be most appropriate for fertilizer response analysis because of the universality of the law of diminishing returns. The equation fitted into the pooled data was

$$\underset{}{Y = 595.38 + \underset{(2.1740)}{11.1787X} - \underset{(1.3028)}{0.0282X^2}}$$

The derived yields from the fitted response equation were calculated corresponding to the various levels of fertilizer use (in content form) and are presented in table I (p. 245) alongwith the average and marginal physical product. The value of R^2 (i.e. 0.9335) which is an indicator of proportion of explained variation is quite high for confirming the goodness of fit into the input-output data.

Optimum dose is the level of input used where profit is maximum. Since every individual is interested in maximising one's profit, this study will serve as guide-lines for making decision about the dose of fertilizer to be used for maximising the profit which is a stage where the additional Kg. of fertilizer used adds to the total revenue equal to its cost. It was determined by differentiating $dy/dp = Cp/Cy$ where Cp is the cost per Kg. of nutrient content (nitrogenous fertilizer) and Cy is the price per kg. of Raya and dy and dp are the marginal output and input respectively. The levels of optimum doses corresponding to varying rates of Raya as well as of nutrient content (N) have been incorporated in table II.

From the foregoing analysis, it may be concluded that 175 Kgs. of nutrient content (N) yield maximum profit at the prevailing prices (price of N being Rs 4.50 and that of Raya being Rs. 3.50 per Kg. respectively).

Note : Figures in the parenthesis indicate the standard error of the respective regression coefficients.

Table II

Optimum Doses of Nitrogenous Fertilizer (in content form) at Various Levels of Prices of Fertilizer and Raya for the Punjab State

Kg./hectare

Prices of Raya (Rs./Kg.)	Prices of nutrient content per kg. (in rupees) in Nitrogenous Fertilizer									
	4.00		4.25		4.50		4.75		5.00	
2.50	169.83	(1680.50)	168.06	(1677.58)	166.28	(1674.47)	164.52	(1671.21)	162.74	(1667.74)
3.00	174.56	(1687.45)	173.08	(1685.41)	171.61	(1683.35)	170.13	(1680.98)	168.65	(1678.58)
3.50	177.94	(1691.63)	176.67	(1690.13)	175.41	(1688.5)	174.14	(1686.98)	172.87	(1685.11)
4.00	180.47	(1694.34)	179.37	(1693.21)	178.26	(1691.99)	177.15	(1690.71)	176.04	(1689.36)
4.50	182.44	(1696.20)	181.45	(1695.29)	180.47	(1694.34)	179.49	(1693.31)	178.50	(1692.26)

* Figures in the brackets indicate estimated yields in Kg./hec.

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ECONOMIC AFFAIRS

Volume 25 Annual Number 1980 Nos. 1—3

Soviet Imperialism

A communist country always poses and claims to be the liberator of the world's poor. The process of this monopoly job of liberation is the sustained "class war" in a supposedly divided world on the basis of production relations. As the process has proved itself illusory the neo-Marxists have begun experimenting with alternative processes : State-wise proletariat revolution to co-existence to proxy war to its latest, naked invasion on such pleas as consolidation of socialist gains, limited sovereignty and the latest invitation to invade as implicit in one of the scores of clauses in a friendly treaty. Another world war will be a greater danger for the Soviet Union than for any other country and equally it is a danger on its part to remain confined to its own political boundary while the communist world is more divided than ever and the democratic world more strong than ever. So it has developed the idea of regional penetration by pieces and through agents active in some such regions. For as Hitler knew that the West would not initially start a second world war so also the Soviet Union knows that America will not stake a nuclear war until its own independence will be at stake It has however had its successful experiment in its East Europe cliental states, Hungary and Czechoslovakia All this did not stir much world indignation as it has done now by its outright invasion of Afghan soil. For in it the world smells the beginning of wider Soviet invasion in Asian soil in view of the fact that Afghanistan is a Muslim state and occupies a geo-politically strategic area. The invasion also provides an example of Soviet Union's manoeuvring of replacement of one pocket national leader by another in the name of protecting the national revolution of a poor country. Where this is the reality it is not prudent to suggest a condition for withdrawal of 80,000 strong Soviet army from Afghan soil or to suggest international neutralization of Afghanistan. Even the suggestion for an international peace force is untenable. The only suggestion, the only answer to this situation is immediate humiliative and unconditional withdrawal of Soviet army from Afghan soil.

Any other alternative is nothing but to provide time to aggressive Soviet Union to consolidate its position on Afghan soil and to die down the warmth of world's condemnation of Soviet imperialism. The alternative suggestions are also an insult for the brave Afghans. Why should they allow their country to become a political commodity that may be traded off ? Will the suggesters of the other alternatives or the super powers ever invite such humiliation for their own countries ? If the Soviet Union has not learnt the full lesson from Hitler's rampage of its own soil or from the American involvement in Vietnum then what awaits it is the fitting reply that would be given by the heroic people of Afghanistan themselves.

One should admit that Afghan problem is the extreme explosion of communist and non-communist world leaders' zeal for thrusting of their own committed ideas upon others and their lust for more power. Thrusting of ideas and lust for power are the two evils of the world today. How can it be resisted ? How can the opposing world liberators be pushed back to their respective territories to serve their own people and educated to extend their genuine cooperation to the poor countries to build up their socio-economic structures in their own way—this far and no farther ? True that the poor are responsible for making the rich richer. 'Amin' is the ambitious product of poverty, an instrument of the committed rich, and also the victim of the very same rich If these two evils of the world are to be banished then the ambitious national intellectuals and political leaders who are too willing to barter their national independence and national heritage to foreign domination and foreign heritage are to be isolated from the people by the people and on the other side the people of the rich countries should resist the rise of the perilous world liberators in their own societies. For they must know, other considerations apart, that the next world war will annihilate the big powers and not the smalls, smalls always go unheeded This is the lesson of the two world wars.

NOTICE

Due to extreme power cut and shortage of printing papers we have been unable to maintain our schedule of publications. In the circumstances, the next issue will come out in June 1980 as a combined number.

10.3 80

Sd/ M. Roy
Manager

Brandt Commission's Proposals

The Exchange Rate Regime. The Brandt Commission argues that, while some of the large movements in exchange rates since the major currencies began to float have promoted adjustment, the wide fluctuations over shorter periods have served no constructive purpose. Official intervention to curb such fluctuations has been motivated by the same basic objectives as the efforts of a number of primary product exporting countries to stabilize world commodity markets. Fluctuating exchange rates add to uncertainty about real earnings from exports and real costs of imports ; this discourages the allocation of investment resources to export production and import substitution and complicates external debt management.

Any serious reform must aim at greater stability of international currencies. This can only be achieved if the reserve system and adjustment mechanism are reformed simultaneously. Domestic economic discipline and the appropriate co-ordination of national policies are essential if Fund surveillance of exchange rate policies is to be effective.

The Reserve System. The main components of international liquidity are gold and foreign exchange holdings. Since developing countries hold little of the world's gold, they have benefited little from its recent price rise. Similarly, the growth of foreign exchange holdings has mainly benefited the developed countries, since the poorest countries have been insufficiently creditworthy to attract commercial bank financing for their short term balance of payments requirements. The present reserve system is unsatisfactory because the expansion of world liquidity is erratic in both volume and distribution.

Gold. The further demonetization of gold will depend on the establishment of more stable currencies and the reduction of inflation in the major countries. It would also be promoted by the use of the Fund's remaining 100 million ounces for development purposes. The report suggests that the bulk of it could be used as collateral for IMF borrowings from financial markets which would be lent primarily to middle-income developing countries. Another part could be sold and the profits used to subsidize interest rates on loans to low-income developing countries.

SDR Allocations. The system of allocating SDRs should be changed in order to provide liquidity to the countries that need it most. These are the countries which are most likely to experience balance of payments deficits and high domestic costs of adjustment, and are least able to finance them from alternative sources. Since many developing countries fit into this category, it would be both efficient and equitable if a larger share of newly created SDRs were allocated to these countries than is at present the case. This link with development assistance need not be inflationary if it does not involve creating more SDRs than are required by the total reserve needs of the world economy. Nor does it mix aid with monetary issues, since the rate of interest on the SDR is so high that it does not involve a concessional element. The report notes that the ratio of official reserves to imports is below the level of the 1960s, and it urges the continued creation of SDRs in accordance with the noninflationery demand for liquidity and in addition to establishing the account

Financing Deficits The Brandt Commission does not believe private banks should play the key role in financing balance of payments deficits, since the capital market has some major shortcomings. The capital market provides reserves in the form of liabilities of national monetary authorities through a mechanism that is difficult to monitor and is easily affected by crises of confidence. It lurches from the provision of too much finance to particular countries to the provision of too little. It tends to exacerbate the problems of servicing and refinancing debt and is not readily accessible to the poorer developing countries. There are also doubts about the continued availability of such finance in the future as banks' exposure to foreign lending increases.

The Adjustment Process. A reformed international monetary system must ensure that both surplus and deficit countries have some obligation to adjust. Means should be found, through the Fund or otherwise, to encourage countries with current account surpluses to make long term loans to deficit countries that are undertaking needed adjustment. The report also proposes that future SDR allocations to surplus countries be reduced while allocations to developing countries be increased. In this way the SDR link would assist the process of adjustment.

The Fund's Resources and Conditionality. While some conditionality is inevitable and acceptable, in practice the conditions have

Continued on page 8

Review

Financial Ratios as Predictors of Borrower's Health, V. S. Kaveri, Sultan Chand & Sons, Delhi-2, Price Rs. 70.00.

Although ratio analysis is not an unknown device for measuring the financial health of a firm and for prediction of its fate it is not in much use in India, least in small scale industries of the country. The objectives of the study that has been undertaken by Mr. V. S. Kaveri are to find out the significance of the ratios in discriminating the small units, evaluate how well financial ratios could predict the borrower's health and to examine the managerial implications of the discriminant model on the banks of India. He has based his study upon a five-ratio model that includes current ratio, stock/cost of goods sold, net profit (before taxes)/total capital employed, current assets/net sales and net worth/total outside liabilities The five ratios reveal the health of a small unit through adequacy of working capital, turnover of the stock, management of current assets, operational efficiency and the debts of the firm. Mr. Kaveri claims that by using the model more than three-fourths of the units were correctly classified and that "this study attempted to predict those events which were not considered by the previous researchers". However he has submitted that there is much scope for developing similar models much to the practical advantage of banks. Admittedly, Mr. Kaveri is a pioneer in this field of study in India.

Anatomy of Rural Unemployment and Policy Prescriptions, G P. Mishra, Associated Publishing House, New Delhi 110005, Price Rs. 5 00.

In this monograph the author expresses his dissatisfaction over the strategy of planning for rural development as it is based simply upon arithmetic of investment and has taken employment as the by-product of the former. What he asserts is an in-depth study of rural problems and needs, both from the points of production and of distribution, so that investment rightly and to the target can generate employment on a sustained basis. He identifies the emergence of a capitalist class of farmers having technical dynamism as the main opposition to employment generation. To overcome the ills he prescribes a 6-point programme that seeks to revolutionise the rural socio-economic base. However welcome the mental attitude of the author it is in the present set-up unrealistic. This would require new set of social conditions that are wanting in the thoughts of the author as he seems to have failed to evolve a new system for India. He has however hit at the right point of rural ills.

Management and Business Economics, Biswanath Ghosh, World Press Private Limited, Calcutta-700073, Price Rs. 26 00.

The book under review is intended for commerce students seeking text book knowledge in manageriel economics. Divided into two parts it contains fifteen chapters. Part one includes such important topics as choice of industrial location, objectives of the firm, demand analysis, advertising, production and cost analysis, optimization techniques and price and output determination under different market structures. Part two has distribution of income and macro economic theory. Lucid and clean explanation of all the complex topics is the main attraction of the book. The students will be additionally benefited by the author's incorporation of mathematical problems with solution.

Continued from page 6

been so rigorous that members have delayed drawing and preferred to borrow from private international banks instead. The Commission contends that the Fund formulates policies on the basis of a monetary approach to balance of payments analysis, an approach which generates too unifrom and rigid conclusions on the required timing and content of programs. Fund programs normally assume that a country's balance of payments problems are the result of excessive domestic demand and can be solved by balancing the budget, curbing the money supply, cutting subsides, and setting a realistic exchange rate. While such measures have sometimes been appropriate and effective, in other cases they have resulted in consumption and productive capacity without improving investment, according to the report.

The report calls for further changes in the Fund's compensatory financing facility. A removal of all quota-based limits on drawings would allow a fuller compensation of export shortfalls. Access to the facility should also take into account movements in import prices and changes in food import requirements. Such amendments would triple the financing that the facility could provide.

Power Sharing. To reflect the changes in international economic and political relations since 1944, the new international monetary system should have pluralistic basis, in which no single country or small group of countries plays a predominant role. The report expects that the People's Republic of China and the socialist countries of Eastern Europe will eventually join the international monetary system.

Some Reflections on Theory of Interest–Elasticity of Saving and Investment

H. Nabakishore Singh*

Whether the savings and investment theory is treated as only a quantity theory much glorified[1] or as a unique theory of money[2], one thing which is obvious from the theory is that both saving and investment are interest-elastic. In fact, it is through the mechanism of the rate of interest that the two are inter-related. The degree and nature of elasticity, however, differ in the two cases and also from person to person and from time to time. Thus, in the model $S=g(r,y)$, $I=f(r)$, $S=I$, saving is a positive function of the rate of interest while investment is a negative function, the rate of interest playing the role of an equilibrating device. Saving depends on ability to save and apart from ability to save which principally depends on income, will· to save is a function of different variables such as prudence, foresight, family affection, desire for power and distinction, etc., and it is not necessarilly the rate of interest which determines the volume of saving

As a matter of fact, there are two types of savers : those who tend to save more when the rate of interest is high and those who do not tend to save more when the rate of interest is high. The former are the speculative lots who anticipate that they can earn a larger amount of income in future in exchange for a given amount of abstention from present consumption. Keynes in his "Treatise" argued that the rate of interest has the power to upset the balance between saving and investment, the effect on saving

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1. J. R. Hicks : A Suggestion for Simplifying the Theory of Money : Economica, New Series, 2 (1935), 1-19.
2. Keynes : Treatise on Money.

being often "quantitatively small in practice, especially over the short period." In this connection, a distinction may be made at least among three views: According to Friedman, aggregate spending and hence aggregate saving is interest elastic. This is particularly so when carried to the extreme. At any rate, a change in the level of income has greater effect on saving than a change in the level of interest. Thus, in the model given above, of the two variables 'r' and 'y' determining saving, 'y' i.e., income seems to be the more important determinant. A second view is held by Samuelson and some others. They are skeptical about the interest-elasticity of saving and investment and are impressed more with variability and not constancy of the velocity of circulation of money as a potent factor influencing saving and investment. In other words, saving and investment are not interest-elastic but velocity-elastic. It may be observed in this connection that whatever the conventional velocity theory says, monetary velocity and the rate of interest are not independent variables. Velocity of circulation of money depends on many factors one of which is certainly the state of the money market and also the capital market—the ease or otherwise of borrowing and lending resulting from the existence of financial and credit institutions. This state of the market depends again, inter alia, on the prevailing rate of interest and the monetary policy of the Central Bank from time to time. Also, monetary velocity depends on the degree of liquidity preference which is undoubtedly one of the factors determining the rate of interest. At any rate, the significance of velocity as a causal factor seems to be limited in view of the fact that the division of money stock between active circulation[3] and liquidity reserves is more or less indeterminate.[4] A third view held by R. V. Roosa is that a high rate of interest is effective more in restricting the availability of credit than in increasing its cost.

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[3] Howard S. Ellis would prefer to divide the stock of money into active circulation, financial circulation and idle balances although, he immediately impounds financial circulation into 'ceteris paribus' : S. Ellis : Some Fundamentals in the Theory of Velocity : Quarterly Journal of Economics, 52 (1937-38), pp. 431-72.

[4] R. F. Harrod : 'Mr. Keynes and the Conventional Theory', in Econometrica, Vol. 5, No. 1 (January 1937), pp. 74-86.

This is not denying the fact of interest-elasticity of saving and investment. On the other hand, it emphasises the importance of the rate of interest vis-a-vis the marginal efficiency of capital and is apparently a departure from Keynes's position in his "General Theory" wherin he maintains that the rate of interest is more or less a stable factor while the marginal efficiency of capital is relatively a more unstable factor and hence more important in determining the volume of investment (and saving, since the two are always and necessarilly equal). One may also remember in this connection the oft-quoted simile of a thirsty horse used by Crowther.

The purpose of the present paper is not to enter into this type of controversy but only to show that both saving and investment are interest-elastic although the degree and nature of interest-elasticity may differ in the two cases. This is obvious from the fact that saving is a positive function of the rate of interest rising and falling together with the latter while investment is a negative function of the rate of interest moving in opposite directions. This is a difference of nature and there is a difference of degree too.

Thus, there are two types of investment, viz., investment in fixed assets like buildings, machines, etc., and investment in inventories or raw materials, intermediate goods and finished products. Interest-elasticity of investment is less in the former where the marginal efficiency of capital rather than the rate of interest is the main consideration. It is greater in the latter case where much less capital (in terms of value) is involved and naturally the significance of its marginal efficiency becomes less But on the whole, investment in fixed assets usually surpasses that in inventories in value if not in importance and a more or less stable or durable factor like the rate of interest is bound to play secondary role vis-a-vis the marginal efficiency of capital. Indeed, the rate of interest is a highly conventional, rather than a highly psychological, entity and its actual value is mainly governed by the prevailing public opinion in regard to its expected value in the future. It is rather tempting to quote here a sentence from Keynes, namely that "any level of interest which is accepted with sufficient conviction as likely to be durable will be durable".[5]

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[5] Keynes : General Theory, p. 203.

Even in the case of the latter, the level of investment in inventories is largely influenced by the level of output and sales rather than by small changes in the rate of interest, i.e., changes in the cost of holding such stocks. On the whole, however, there is a general tendency for a high rate of interest discouraging investment and vice versa while at the same time encouraging saving and vice versa. The possible equilibrium positions are given where saving and investment plans are consistent This consistency need not necessarily be at the full employment equilibrium position but at any other position of under employment equilibrium as well.

Changes in the rate of interest thus affect both saving and investment, but in opposite directions, and to use Robertson's language, there is "no wisdom in putting the rate of interest in chains". Again, as Sayers would say, "the efficacy of the interest rate has changed and will go on changing continuously, some forces tending to dull its edge while others sharpen it. The rebate on the modus operandi continues, but while it continues, the phenomenon itself is changing".[6]

In fact, the significance of the bank rate which affects both long and short term rates in the economy has undergone a considerable change in view of this changed context regarding the efficacy of the interest rate. As a matter of fact, the bank rate becomes effective when commercial banks rediscount bills at the Central Bank or borrow from it regularly and habitually and when the C B. has enough power to make its voice felt in the money market. This will happen when three conditions are fulfilled. First, commercial banks should have no prejudice against rediscounting at the C. B. Secondly, they should generally keep cash reserves with themselves only just sufficient for ordinary purposes. Thirdly, they should possess sufficient bills which fulfil the eligibility canons of the C. B.

The complete or partial absence of these condition makes the bank rate "a halting, clumsy, indeed a brutal, instrument" in both underdeveloped and developed money markets. In the former, interest rates are often customary and not competitive and they

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6. R S. Sayers: 'Interest Rate as a Weapon of Economic Policy' in Oxford Studies in Price Mechanism.

do not easily and automatically follow changes in the bank rate. In the latter, the C. B.'s efforts to caution credit creation may be frustrated by the simultaneous inflow of the proceeds of higher export earnings. Whether the bank rate works through its effects on short rates or it waits for its "sympathetic effect" on long rates is only a matter of opinion.

A cheap money policy has healthy effect on the capital market and thus encourages investment. It also helps capital formation particularly of the type having long gestation periods e. g., public utilities, construction, etc. Besides, it is useful in dealing with problems of secular stagnation of markets in advanced capitalist countries since it minimises the secular tendency of saving outpacing investment. It also fosters faster rates of economic growth in underdeveloped countries. Since such a policy is conducive to investment, it is more useful in increasing employment opportunities than the classical wage-cut device which is entirely out of context to-day.

At the same time, it is true that it is increased marginal efficiency of capital and not so much a low rate of interest which can initiate an accelerated process of investment. Such a policy is not also desirable, particularly when carried to the extreme, in so far as it discourages thrift or saving, to say nothing about its inflationary potential.

In any case, the relation between the rate of interest and saving or investment is not one of a simple cause-and-effect nature but of a mutually determining one. It is the gist of the criticism made by Hicks, Hansen and Lerner against Keynes's liquidity preference theory of interest that the latter does not bring out all the variables of the interest function. Keynes gives only two variables, viz., liquidity preference and the quantity of money. But according to Hicks, there should be four variables, viz., saving, investment, liquidity preference and the quantity of money.[7] Hensen's variables are consumption function, investment function, liquidity preference and the quantity of money[8] while

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7. J. R. Hicks: "Mr. Keynes and the Classics: A Suggested Interpretation," Econometrica (1937), pp. 147-159.

8. A. H. Hansen: Monetary Theory and Fiscal Policy, Ch. V, pp. 71-83.

Lerner's functions are propensity to consume, marginal efficiency of capital, liquidity preference and the quantity of money.[9] Indeed on the basis of these functions Hicks and Hansen have formulated the IS-LM theory of the equilibrium rate of interest. The inference is that one can think in terms of saving-elasticity or investment-elasticity of interest in the same way as one thinks of interest-elasticity of saving-investment theory which lays down that the savings-investment analysis is an analytical device to explain the determination of the interest rate, not that of the levels of output and employment.[10] The classical choice of interest rate as an equilibrating device between saving and investment is not, of course, free of difficulty. The difficulty arises from its assumption of Say's law of markets and the classical habit of assuming income to be constant. If we drop this assumption, as we should, the savings-investment equilibrium is found to depend not only on the going rate of interest but also on the level of income. Income rather than interest is the proper equilibrating device. As a matter of fact, saving and investment depend not only on interest and income on the monetary side but also on a number of non-monetary variables on the real side.

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9. A. P. Lerner : "General Thaory" in The New Economics, and "Alternative Formulations of the Theory of Interest," ibid.

10. K. K. Kurihara : Monetary Theory and Public Policy, pp. 131-2.

OIL PRICING DEVELOPMENTS

While Saudi Arabia increased the price of Arabian light crude by a third, other OPEC countries also announced higher official selling prices for their crude oils in a few cases exceeding $30 per barrel. The price of the marker crude was $12.70 per barrel in 1978 and was increased in accordance with decisions taken at OPEC meetings in December 1978, March 1979 and June 1979.

At their Caracas meeting the members of OPEC decided to increase the capital of the OPEC Special Fund by an amount up to $1.6 billion, in addition to the $800 million agreed upon at the meeting in June 1979. These additional contributions would bring the total capital of the OPEC Special Fund, which provides financial assistance to other developing countries, to $4 billion.

Agriculture and Development in Zambia

Purna Samanta*

Since the last massive drop in the price of copper (from K1,326.14 to K793.75 per tonne in 1975), many problems have manifested themselves on the surface. The dominance of copper is the correct appreciation of the structure of Zambia's economy. So much so that in 1967, the percentage contribution of copper industry to G. D. P. was 32, export earning 95, goverment revenue 56, African employmet 15.[1] Due to this recent fall in the price of copper, the only change in recent years is that its contribution to government revenue has become almost nil. It is in this context that the diversification of the economy has been planned.

Critics are almost unanimous on one point, namely, neglect of agriculture, and failure to create a development base during the First National Development Plan have brought about this critical situation. Absence of appropriate policy for the key group of farmers has been cited as the major reason of this dismal peformance of agriculture.[2] Nevertheless, it is also to be borne in mind that the assumption of a mineral rich economy tempts to blur correct appreciation of the problem inherent in the economy. That is why this realization that agriculture is the mainstay of the economy has come at a later stage.

The purpose of this paper is to highlight some of the recent developments of agriculture in Zambia with a view to analysing the problems within agriculture itself, irrespective of the reference to the economic facts of the Unilateral Declaration of Independence by Rhodesia in 1965, very low copper price and manifold rise in

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* University of Zambia.

1. Sources : National Accounts and Copperbelt of Zambia Mining Industry Year Book, 1967.
2. Constraints in Agriculture (Zambia)—R. Roberts and C. E. Miot 3 groups of Farmers in Zambia, namely, large-scale commercial farmers (European), emergent farmers, subsistence farmers.

the price of oil which certainly have bearing on the performance of this economy as a whole.

"The principal objectives of the Second National Development Plan for the rural sector are :

(a) to improve rural standards of living and to create a self-reliant and progressive rural society ;

(b) to create in the rural areas new employment and income opportunities and to improve those infra-structural services related to incresed rural productivity, in order to counteract migration to the urban areas ;

(c) to increase the contribution of the sector to the GDP and to promote the diversification of the economy ;

(d) to develop self-sufficiency in staple foodstuffs and to reduce the growing dependence on imports of higher value commodities ;

(e) to improve nutritional standards by means of increased production and consumption of protein and protective foods for local rural consumption rather than merely as cash crops."[3]

The minor role of agriculture in the development process in Zambia is illustrated by the fact that although approximately 70% of the population live in the rural areas and are dependent on agriculture, in 1974 agriculture only contributed 9.3% to the Gross Domestic Product. If we exclude the small number of commercial farmers from this total, agriculture's contribution to GDP falls to about 6%. Allied to this low contribution of agriculture are two further problems : the rapidly increasing population and the alarming increase in the import of food-stuffs such as wheat, rice, meat and dairy products and edible oils. In 1965 the total import of food-stuffs was K16.5 m, by 1974 it is estimated to have risen to nearly K44m. The imports of agricultural products into Zambia used up valuable foreign reserves which could have been used for other purposes. Besides this consideration, Zambia has sufficient agricultural potential to be a net exporter of agricultural products, and thus earning foreign exchange as well as diversifying her economy. The growth of agriculture will also reduce the urban-rural income

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* A Zambian Kwacha (ZK) = Rs 10.00 = £ 0.57 as in Nov., '79.

[3] SNDP=Second National Development Plan.

differential as well as alleviate and perhaps eliminate malnutrition. According to the central statistical office, national per capita income in 1974 was K332. The national figures, however, are very misleading for the average urban per capital income was as high as K800 whereas the rural per capita income was only K57.

If one considers the fact that 70% of the population is dependent on agriculture, it is a valuable and potential source of employment. If agriculture only grows slowly, the national income will do likewise, and so will the demand for urban industrial goods. The interdependence of agriculture and the other sectors of the economy is considerable. The backward linkages of agriculture include such sectors as chemicals (fertilizers, insecticides, and pharmaceutical products), services (insurance, banking and marketing), construction (buildings, irrigation and water supply), manufacturing, (agricultural equipment and machinery), transportation and energy. In addition to the backward linkages there are also forward linkages such as food processing (canning, bottling, freezing and dehydrating), textiles (cotton), construction (timber), manufacturing (furniture, tiles and cigarettes). Unfortunately in the initial stages of development the backward linkages may generate some increase in imports as the domestic economy may not be able to satisfy the demand for agricultural inputs completely. The forward linkages after an initial adverse effect on foreign exchange can provide valuable export. earnings.

It should be remembered, however, that in the development process agriculture will be of vital importance in supplying food for labour and raw materials to the expanding economy.

An examination of the figures on marketed agricultural products indicates that there is a considerable disparity between different products—some have been fluctuating, others have been declining and still others have been expanding.

There are various factors militating against the expansion of agriculture in Zambia. Although average rainfall in Zambia is very good, it is seasonal, heavy and irregular, which means that only the most hardy crops are able to survive the rains. Soil in Zambia is not of the highest quality everywhere ; some soils require fertilizers, consequently it will not be suitable for traditional farmers.

The distance from the market and the resultant high transport costs militates against farmers using the most productive land. Many low-value high-bulk crops are vulnerable to this "distance-constraint". A transport subsidy may overcome part of this problem. The constraint of skilled labour in agriculture ranges from inefficient farming methods to bad management. Extension services endeavour to overcome this problem, but unless there is positive discrimination in favour of rural areas in terms of salary and conditions of employment, its impact on agriculture will be small. Investment in agriculture by the small scale traditional farmers is almost non-existent, and government credit schemes in the past have proved to be too expensive as the repayment rate was very poor. Despite all the publicity given to rural development, the projected and actual flow of resources to the rural areas has been small compared to the resources devoted to manufacturing, mining, transport and communication. (Table 1.5, page 43, SNDP, "Total investment outlay, 1972-76 by economic sectors and sources of finance").

A major feature of agriculture in Zambia is the sharp contrast which exists between the small number of commercial farmers who produce for the market and the very large number of small scale farming units which produce partly for the market and partly for subsistence. Between these two extremes are the emergent Zambian medium size farmers, the cooperatives and the state farms Much of the emphasis of agricultural development has been placed on the small scale village farmers which form the bulk of the farming community. The output from the traditional farmers has been low because they operate on a small scale with very little capital equipment and out-dated methods of production.

The transformation of the traditional sector is not an easy task, and the one-off solution whether it is mechanisation, irrigation, fertilisers, new hybrid seeds and so on rarely works. Many factors have to be taken into consideration simultaneously before the traditional agricultural sector can become more efficient. Perhaps there may be a need for transitional stages before it becomes fully commercialised and respond to market conditions. Many more pilot schemes need to be started in the rural areas before we fully understand the technical, natural and social conditions to which traditional farmers will respond,

Administration and extension advice must be of the highest quality and here the government can discriminate in favour of those officers in the rural areas at the expense of their compatriots in the urban areas. Although marketing and transport facilities will be necessary, the location of more food processing plants which guarantees a market and a regular income to the farmer may prove more successful.

Agricultural pricing policies should be geared to increase production as well as to attract new farmers It is a false economy to import food, such as wheat, rice and beef, at highly inflated world prices when it can perhaps be produced domestically at a marginally cheaper price. Preplanting and producer prices can be announced earlier and all imported items can be related to higher world prices which will provide incentives to our farmers. The policy of increased emphasis on the small scale farmer and rural development may create more employment, reduce rural-urban population drift, reduce the income gap and increase the size of the money economy. These are, however, medium to long term objectives. In the short term, Zambia may still have to rely on the commercial farmers for an increase in the agricultural production to meet the demands of a rapidly growing population.

Economic Report, 1975, of course, notes satisfactorily, the contribution to agricultural output by the traditional farmers—an improvement of 57% in the marketed output from Western Province alone This has been possible due to upward revision of producers' prices of some selected crops, like maize, groundnuts, sunflower seeds and soya beans. Although some economic consultants[4] believe that they should be revised even further up so as to improve rural terms of trade, it is not quite clear what this limit of this increase would be in a situation of a double digit inflation and the pressing social objective of sibsidizing the essentials for the poor.

Since 1975, some developments have taken place in Zambian agriculture which may have far-reaching consequences. This has been the result of the policy of diversification initiated in the Second

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[4] Prof. R. Dumont, French Agrcnomist currently on visit in Zambia

National Development Plan. Of couse, commentators[5] believe that this diversification has been too slow to create any serious impact to alter the basic structure of lop-sidedness of the economy. For example, production of sunflower has gone up in 1975 almost by 190%. But this should not cause any complacency, as it was mainly due to the shift of acreage by the commercial farmers from maize to sunflower on account of ill-timed and delayed rainfall in that year. Considerable fluctuations have occurred in most of the major crops, e g, maize, groundnuts, seeds cotton and coffee.[6] This may be understood in view of revelation, namely, 'in fact, the increase in average prices received by farmers was also higher by 25.4 percent in 1975 as against an increase of only 2 8 percent in 1974. There is, therefore, reason to believe that "terms of trade have turned in favour of the farmer ... ; It is likely, however, that the benefit of higher price has gone to the large scale farmer and the peri-urban small farmer".[7] The remedy to the observation may partly solve the shortfalls in the production of tobacco, cotton, rice, marketed livestock products which have produced a dismal picture of the S.N D.P. achievements. Equally important is pricing-practice which is certainly to be reviewed in the light of the existing realities For instance, the Kayambia Tea Company is alleged to be losing because of an unrealistic price formula, and beef prices paid by private traders are still higher than official prices causing some disquieting development in beef production.

Sometimes, capacity expansion has taken place without reference to markets, e.g, Zambia Sugar Company has earmarked 1977 capacity expansion at 25,000 hectares and 120,000 tons from its preivious capacity of 20,000 hectares and 86,000 tons of sugar. This phenomenon of excess capacity is causing concern in many sectors of the economy. "Thus, the total value of the agricultural sector in 1975 remained stagnent at the level of 1978".[8]

During 1976, the S N.D.P growth rate of 8.5% in the marketed production of agriculture was virtually reached with 1971 as the

[5] M. R. Bhagaban, Research Report No. 44, Scandinavian Institute of African Studies.

[6] Bank Of Zambia—Annual Report, 1975—Table 3.1, Page 12.

[7] Ibid—Page, 12.

[8] Economic Report—1975, Page 31.

base. In spite of this, "no visible impact on the standard of living of the people can be noticed for the rural areas. The sector as a whole accounts for 14% of import and countributes only 1% to exports. The experience during the past few years would indicate that the country has a huge built-in potential which, if properly exploited, can pay dividend".[9]

It will be interesting to see how the Third National Development Plan can exploit these potential to take the economy to take-off into self-sustained growth in the light of the development experiences of Zambia's recent past.

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9. Economic Report—1976, Page 39.

OIL IMPORT LIMITS OF IEA COUNTRIES

(in million tons of oil equivalents[1])

Country	1980	1985
Australia	13.5	17.0
Austria	11.5	13.5
Belgium	30.0	31.0
Canada	7.4	29.4
Denmark	16.5	11.0
Germany, Fed. Rep.	143.0	141.0
Greece	14.8	16.5
Ireland	6.5	8.0
Italy	103.5	124.0
Japan	265.3	308.66
Luxembourg	1.5	2.0
Netherlands	42.0	49.0
New Zealand	4.2	4.4
Norway	—15.5	—18.3
Spain	51.0	52.9
Sweden	29.9	29.0
Switzerland	14.0	14.5
Turkey	17.0	25.0
United Kingdom	12.0	—5.0
United Sates and Territories	437.2	436.0
IEA Total[2]	**1,205.3**	**1,289.56**

1. Includes natural gas liquids.
2. The IEA Totals are equivalent, respectively, to 24.5 and 26.2 million barrels per day.

Data : International Energy Agency, Paris

Non-Aggression as a Political Policy

Michael Meacock*

[*The vast majority of the world's population are under-fed, under-clothes, under-educated, under-housed, and in permanent ill health. The term "developing country" implies that improvement is taking place, though all too often it is not. What is the magical formula necessary to initiate—and to sustain—a noticeable and appreciable movement towards improvement ?*

The following conditions must be present if overall development is to take place.

1. *A just and stable overall Constitutional situation.*
2. *A disciplined force (police and armed forces) acting only within the Constitution.*
3. *A degree of political expertise—specifically, a body of people interpreting wisely and efficiently a policy which aims to benefit the overall population (rather than any sectional interest). This should aim to eliminate the obstacles of injustice, and to provide the guidance necessary for development and the realization of people's just aspirations.*
4. *A population which, though poor and underprivileged, has the desire to consume and the will to produce, given proper guidance and the absence of political obstacles.*
5. *A privileged minority who appreciate the need for overall national development and who are willing to put their initiative and enterprise to work for a fair and just reward.*

Of these five elements, assuming that items 1 and 2 continue to be present, item 3 represents by far the greatest need in India today—Expertise or more specifically a Plan, worked out in detail, based on a fair and objective guiding policy. A Plan which is not just an academic exercise, a Plan which can be put into action. A Plan which will work for the poor. A Plan which will convince the rich that far from

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* Wales / G.B.

being used as scapegoats, their enterprise is actively sought, and will help build not a rich government, but a rich nation from which all can benefit.

If we are to succeed in generating a concrete Plan for development rather than accademic discussion alone, three important rules must be laid down at the outset and consistently observed. First, a new, objective policy must be formulated and then meticulously observed, both as a guide and as a discipline. Second, all thoughts and theories, plans and proposals, must at all times be directy oriented to concrete action for development. Third, all individual researches and contributions must be co-ordinated—for example via the medium of this Journal—in order to ensure that the end result is a coherent whole There are numerous academic research foundations, writers and thinkers offering numerous very valid suggestions, plans and systems which would surely contribute to development ; however the aim now must be to co ordinate these efforts through a consistent basic policy, co-ordinated debate, and a unified Plan, with the influence and weight of speaking with one voice.

A new Policy, the co-ordinated efforts of the country's intellectuals, and a Plan for Development. This is the challenge of the series of articles now beginning. And this is the challenge of the poor yet able-bodied masses who need political guidance to turn production into consumption, to turn poverty into prosperity and aspiration into actuality.]

There are broadly speaking two choices of policy : one is conservatism, free enterprise, laisser-faire ; the other is socialism-communism.

Some nations are inseparably wedded to one or the othe policy—by inclination or revolution, by choice or by force. The united States will always be a country of free individual enterprise, while communism appears to be generally acceptable to the Chinese temperament. Britain is an interesting, perhaps unique case where the population is fairly equally divided between aristocratic and upper class conservatives, and working class socialists The Parliamentary confrontation between King and Parliament, establishment and progressives, Conservatives and Socialists, has been a feature of British politics for many hundreds of years, though it was intensified with the Industrial Revolution in the last century. The British two-Parliamentary Democracy is often mistakenly thought of as a "system" which can be transplanted to developing countries, but it rarely works, and people do not understand why. In fact this system is a reflection of the class confrontation in the country as a whole, and where there is no such balanced class confrontation, the political and parliamentary system which reflects it will not work. In the continental European countries, for example, such as France or Italy, there are many more small parties which form coalitions, sometimes permanent, sometimes transitory. Crises occur regularly as these coalitions break up and re-form.

In India there is not the historical background of allegiance to Conservatism or Socialism pervading the country, and neither policy would seem suited to India's present condition or her people's temperament. A new line of though is thus called for.

In fact this is also largely true in Britain today ; traditional Conservatism and Socialism are seen as extremes, and people are increasingly looking to the area in the centre for some kind of universally acceptable policy solution.

Policy to date has generally been a reflection of class or sectional interest. Conservatism is a policy for the Strong—those with historical, social, and economic privilege. There interests are best served by a minimum of government interference, which allows them freedom to emploit those weaker and less capable than themselves. This system can be criticized for exercising *too little* control

Socialism-communism goes to the opposite extreme. To prevent exploitation, this system takes all initiative and enterprise out of individual hands, placing it in the care of the State. Criticism of Socialism-communism generally comes down to one single fundamental complaint : *too much* government control.

If Conservative free enterprise exercises too little control and thus allows exploitation, while Socialism-communism exercises too much control and removes all individual enterprise, the logical solution would be a policy between the two, a policy which exercises sufficient control to prevent exploitation, but no more control than that. Stated in another way—"freedom until that freedom restricts the freedom of another"—this principle has been the basis of English

Common Law for centuries. In India this same principle is the simple law of non-aggression.

As a policy guiding legislation it can be very precisely defined. The purpose of law becomes purely—and precisely—protective; its object is to prevent people intruding upon one another's freedom. If any individual can show that his freedom is being intruded upon by another, then government control is insufficient and the law is not doing its job. But if the law attempts to prevent you from doing something which does not intrude upon the freedom of others, then government control is excessive and the law is exceeding its guiding policy.

This policy of Non-Aggression, this "Centre Policy" (since it falls between the 'left' of Socialism-communism and the 'right' of free-enterprise-Conservatism), this is an Objective Policy rather than a Subjective Policy. A Subjective Policy serves a specific sectional interest; an Objective Policy looks not to class or group interest, but attempts simply to minimize aggression and to maximize freedom in the best interests of everyone.

It has been said that Policy is necessary fot two purposes: guidance, and discipline. The Policy must obviously be very carefully interpreted, particularly in the early stages while a body of precedence is being built up. But it can be defined sufficiently closely to ensure accurate and consistent legislation.

In the area of Personal Liberties, the Centre Policy of Non-Aggression protects the individual's person and property from injury or theft. This is now undertaken by most civilized governments. However our definition has observed that government control must not exceed this protective function. A very large area which would require considerable revision under the Centre Policy is that of taxation. Most governments at present consider it their right to take as much of the individual's earnings as they see fit, without Constitutional limitation and without discipline to ensure wise spending. Under Centre Policy, government can only charge for political services rendered. Furthermore, as we will later observe in a subsequent article, government becomes obligated under Centre Policy to operate with maximum efficiency, at minimum cost, and must confine itself to political administration only, without undertaking any form of commercial activity such as the operation of industries or services.

In the area of Natural Resources, we must acknowledge as a basis, the fundamental fact that natural resources are natural—that is, not attributable to, or originating from human labour (though of course humans may add their labour to the natural resources). A Centre Policy of Non-Aggression cannot allow one individual or a group or class of individuals to take over for their exclusive use a disproportionate area of the natural resources. This in turn requires a definition of "fair and proportional use" on a national scale—a national plan which attempts initially and continuously to balance and reconcile available resources with overall needs. This is indeed a complex and demanding process ; but the principle of fair and proportional use of, and access to, the natural resources is established, and likewise feudalism is fundamentally rejected,

In the Economic Sector, the Centre Policy of Non-Aggression requires fair exchange as between employer and employee, as well as between producer and consumer. This in turn requires a national system of wage and price evaluation — which incidentally is equally essential if monetary stability is ever to be achieved. Wage and price evalution, conditions of work, quality and standards of goods and services — these and similar associated factors become issues for legislation ensuring fair exchange between the participant groups in industry and commerce. A degree of national and local economic planning also becomes necessary to ensure the maximum beneficial use of scarce resources, particularly financial investment.

Looking now briefly at the issue of Constitutional discipline, we may observe a number of stages.

Under the most politically primitive situation, a dictator or small group of close beneficiaries rules for personal pleasure and profit. The main virtue of democracy is that it replaces this kind of autocracy.

In theory, democracy is the rule of the people. The great fallacy of democracy is that it supposes "the people" to be of one mind which of course they are not So political parties are formed representing various sectional interests, and the democratic process in general ensures that elections are held regularly to reflect the current will of the people. The balance of forces within the legislature further ensures that the ruling party is disciplined and prevented from going to extremes.

If we are now looking at an Objective Policy, a Policy which sets out to further the overall interests of the nation as a whole without basis for or against any particular class or sectional interest, a Policy which moreover can be accurately defined and interpreted, then we begin to see the possibility of a new type of discipline. The Policy itself becomes the discipline, for the Policy is the ultimate Law, and the legislators become simply functionaries, interpreting the Policy accurately, under continued observation and scrutiny from all educated observers. Indeed, interpretation of Policy would no longer be the esoteric and secret preserve of government officials and civil servants, but could (and indeed should) be paralleled in universities, learned journals, meetings of special-interest societies etc throughout the nation. The job of legislators now becomes simply and clearly to interpret the Policy ; they no longer have leeway for personal whims, or favours to pressure groups. The Policy is the discipline, the educated populace the watchdogs, and of course the Constitutional Machinery stands as the ultimate guardian, with the prerogative of refusing to give force to law, or even of dismissing the interpretative apparatus or any part of it for suitable replacement, should the Policy be incorrectly applied.

So we propose a new policy. To the Socialism — Conservatism oriented world, it is a Policy between the two, avoiding the extremes of either. To Indian background and philosophy, it is Non-Aggression formulated as a clearly definable and workable political Policy.

The Policy is the discipline which ensures consistent, coherent, legislation, as well as accuracy and honesty in its legislators. Policy is integrated with Constitution, which gives force to law only as long as legislation reflects correct interpretations of Policy.

In following articles we need to look at the broad lines of interpretation of the Policy of Non-Aggression, in order to establish the foundation for a concrete Plan of Action.

A Note on Adam Smith's Second Regulator of Wealth

John Jackson*

Introduction

In his introduction to the *Wealth of Nations*, Adam Smith identifies two regulators of wealth. The first is today called productivity. It includes such factors as advanced technology and effective management. His second wealth regulator is less familiar. It can be called employment efficiency. Adam Smith defines his second regulator as the proportion of those employed in productive enterprise. Both these regulators of wealth are expressions of efficiency. One is efficiency of production ; the other, efficiency of employment.

The two factors of efficiency

Define efficiency as the ratio of output to input. Output is goods and services available to the consumer, symbolized G_a. Input is time ; the number of hours in the standard workweek, symbolized T. Thus,

$$E = G_a / T \tag{1}$$

and

$$G_a = TE \tag{2}$$

According to Adam Smith there are two efficiency factors, efficiency of production and efficiency of employment. Thus,

$$E = E_p E_e \tag{3}$$

Output, G_a, is seen to depend upon three factors : time input, T ; production efficiency, E_p ; and employment efficiency, E_e. Thus,

$$G_a = TE_p E_e . \tag{4}$$

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The second regulator of wealth

The proportion of those who are productively employed defines the second wealth regulator, here termed employment efficiency, E_e. For the condition of full employment, this efficiency is one hundred percent. Thus,

$$E_e = 1 \tag{5}$$

Employment efficiency is reduced by percent of unemployment, U.

$$E_e = 1 - U \tag{6}$$

The two components of unemployment

There are two components of unemployment. One is easily defined in accordance with customary usage in labour statistics. The second component of unemployment is not so visible. In the United States, over forty percent of salaries, wages and other benefits come from some agency of government. If there were no tax appropriations, this word translates into unemployment. Employment efficiency is reduced by these two factors of unemployment.

$$E_e = 1 - U - kR \tag{7}$$

The symbol R denotes average federal tax rate. The constant, k, accounts for state and local taxes. When all these factors are included, the result is the Smith equation, so-called since its derivation is based on Smith's two regulators of wealth.

$$G_a = TE_p\,(1 - U - kR) \tag{8}$$

The Smith equation

Examination of Eqn. 8 indicates that quantities of goods and services increase in direct proportion to workweek length and to production efficiency. An increment in goods is also seen to accompany decrements in unemployment and tax rate. These observations bear little relation to the world of objective reality, since the market eventually saturates and G_a can no longer be treated as a variable ; it becomes constant.

When the market saturates and G_a becomes constant, Eqn. 8 indicates that an increase in unemployment is caused by an increase in productivity. A trade-off between tax rate and unemployment is seen to exist. Practically, this means that when the government makes a market, the unemployment problem is solved, but at the expense of higher taxes.

It appears that we are forced to choose between taxation and unemployment. Either that or reduce productivity. Here are three dismal choices. Fortunately, a happy alternative is indicated by the Smith equation. Regard the fourth variable, T, length of the standard workweek.

Consequences of workweek reduction

Examination of Eqn. 8 indicates that reduction in length of the standard workweek is consonant with reduction in unemployment, reduction in tax rate, and an increase in productivity. These observations are based on the assumption that goods and services available to the consumer remain at a constant level This constant output implies that total consumable income remains constant. Reduction in workweek length does no reduce income.

Conclusion

Adam Smith looked upon dependency as a major source of crime and corruption. His proposed solution was to set men free by creating an ambience of cheapness and plenty. High productivy, accompanied by full employment, can accomplish this end.

Social Indicators and Regional Development in Developing Countries: India I

Mahinder Chaudhry*
and
K. R. G. Nair*

I. Introduction

Macro-and micro-economic models are fairly familiar, but it does not appear to be so with the social models. Although attempts have been made to formulate partial and total social models, such as Easton's model of the political system,[1] the efforts to construct complete or macro social models, including economic, social, cultural, religious and technological factors, have not yet resulted in widely accepted general theory of a social system.[2] The difficulties encountered in the construction of such a comprehensive model are well known. We do not have a common dimension, such as the monetary unit in the economic models, to relate all the components. The ranking of the society's goals is not without its perplexing problems. In addition, all variables in the social system do not lend themselves to quantitative measures, such as privacy and social rights. In view of the difficulties of a macro approach involving development and use of an integrated social system, it may be profitable, as a first step, to examine the functioning of each subsystem separately In order to monitor changes in living conditions and general welfare, many attempts have been made to

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[1] David Easton, *A System Analysis of Political Life* (New York: John Wiley, 1965).

[2] B. M. Gross, "The State of the Nation: Social Systems Accounting", in *Social Indicators*, edited by R. A Baur (Cambridge, Mass.: MIT Press, 1966).

develop various measures. The main inspiration for what Moser calls the "social indicator movement" comes from two sources: (i) the inadequacy of the present national economic accounting system to deal with non-economic components of the general welfare; and (ii) to study the consequences of modern technological and industrial development with ever increasing "social" cost.

Inadequacy of the national income accounting system: The fact that the present system of national income and product accounts is deficient in many dimensions for the measurement of economic and social performance, is receiving increasing attention in many meetings and conferences and in recent publications in this area. It is believed that a considerable extension and modification of the system is required to make it more relevant to modern social problems. It is argued that it is not enough to include the extended imputed transactions or social costs in terms of deterioration of physical and social environment. The amendments and extensions must embrace problems relating to, among others, education, health care, and demographic and social characteristics of population.[1] Juster, while suggesting a framework for the measurement of economic and social performance, says, "the criticism has been as diverse in its sources as its content: social accountants have pointed the deficiencies in the capital accounts, in the treatment of household economic activity, and in the treatment of consumption provided directly by business enterprises; those in the forefront of the ecology movement, including a number of physical scientists, have issued scathing and often illinformed critical comments about the degree to which the presents overstate the gain in real income because of the way in which environmental deterioration and the unwanted byproducts of economic activity are handled ; and even the 'man in the street', as represented by the popular literature produced by journalists and other writers, has been sufficiently aroused to add an occasional voice to the chorus".[1]

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[1] N. Ruggles, and R. Ruggles, *The Design of Economic Accounts*, (New York: National Bureau of Economic Research, 1970); Nancy Ruggles and Richard Ruggles, "A Proposal for a System of Economic and Social Accounts," in *The Measurement of Economic and Social Performance*, edited by Milton Moss, *Studies in Income and Wealth*, Volume 31 (New York: National Bureau of Economic Research, 1973); J. W. Kendrick, "The Treatment of Intangible Resources as Capital", paper presented to the Twelfth General Conference of the International Association for Research in Income and Wealth, Sweden, September, 1971; Robert Eisner, "Measurement and Analysis of National Income (Nonincome Income)", in National Bureau of Economic Research, *50th Annual Report*, September, 1970.

The present economic accounts are designed to record market transactions and the imputations which are made for nonmarket transactions — owner occupied houses, imputed interest, and farm-produce consumed by the producers, etc.—are minor elements. On the other hand, nonmarket activity, particularly in the households, has been disregarded However, attempts have been made by Kendrick and others to include such items as the services of housewives, compensation for students, imputed rental on capital goods held by households, and intangible investments including education and training, research and development, and costs of rearing children.[2]

It is believed that even if suggested extensions and modifications of the national income and product accounts were successfully implemented, the final outcome would still fall short of the required comprehensive economic and social accounting system ; for every transaction is expressed in terms of dollar valuation, excluding non-economic activities. Ruggles and Ruggles rightly observe that "this approach (macroeconomic accounts) gives relatively little explicit consideration to social and demographic characteristics, or to differential behavior of different groups in society. Thus questions of discrimina-

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1. F. Thomas Juster, "A Framework for the Measurement of Economic and Social Performance" in *The Measurement of Economic and Social Performance*, edited by Milton Moss, *Studies in Income and Wealth*, Volume 38, (New York : National Bureau of Economic Research, 1973), pp. 25-26.

2. John W. Kendrick, "Studies in the National Income Accounts", in National Bureau of Economic Research, *47th Annual Report* June, 1967 ; Reuben Gronau, "The Measurement of Output of the Non-market Sector : The Evaluation of Housewives' Time", in *The Measurement of Economic and Social Performance*, edited by Milton Moss, *Studies in Income and Wealth*, Vol. 38 (New York : National Bureau of Economic Research, 1973), 163-190.

tion, provision of economic opportunity, crime, and health are left untouched except insofar as they are reflected in the monetary estimtation of social gain or loss".[1]

II Features of a Social Indicator

There is no clear and precise definition of social indicators which appears to enjoy wide acceptance by the academic social scientists and social accountants. It is sometimes suggested that a social indicator should be a weighted index number, like the Gross National Product. Others would like to see it as a measure of quality of life, not dissimilar to temperature-humidity index Still others assert that social indicators should reflect the output of societies rather than the different subsector input series. For example, in education these should measure achievement rather than inputs. i.e., expenditure on education. It may not be incorrect to say that in addition to differences of opinion, there is some confusion in the literature. Social indicators have been equated by some writers to "good social statistics", as long as they are disaggregated time series.

Professor Moser discusses five major distinguishing features of social indicators :[2] (i) The social indicators will frequently, though not necessarily, be normative. A distinction should be drawn between the indicator as a statistic and the context of its use. For example, the birth rate will have different implications for say, India and Canada. (ii) The social indicators should relate to outputs rather than inputs of social programmes, though again not necessarily. Examples are the recording of improvements in health rather than of expenditures on health services. In brief, indicators should relate to ends rather than means. Two related conceptual problems of "intermediate" ends, such as attendance at schools, and difficulties of measuring outputs, as in health, are yet unresolved. (iii) Social indicators should necessarily be combinations of series—index numbers.

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1. Nancv Ruggles and Richard Ruggles, "A Proposal for a System of Economic and Social Accounts" in *The Measurement of Economic and Social Performance*, p. 114.

2. Sir Claus Moser, "Social Indicators—Systems, Methods and Problems". *The Review of Income and Wealth*, Series No. 19, (1973) : 133-141.

The problems of construction and weighting are substantial. (iv) Social indicators should summarize or represent a broader concept than itself and it should belong to a structure or system of series. (v) A series should be termed a social indicator only if it belongs to a structure or system. It must be genuinely "indicative" of something.

Professor Moser, cautioning that the term "social indicator" is used in many different senses which often are confusing, concludes that "in our work, we shall increasingly try to restrict the term to time series which relate to individual or households that are measures of output, and fit into an explicit structure of series, i.e., into a set of relationships".[1]

Land has described three carefully conceptually interrelated measures of a subsystem variable : (1) Output Descriptive Indicators are measures of the end products of social process and are mostly directly related to "the appraisal of social policy" ; (2) Other Descriptive Indicators are "more general measures of the social conditions of human existence and the changes taking place therein" ; and (3) Analytical indicators are "concepts of explicit conceptual models of the social processes which result in the value of the output indicators".[2] Further extending his analysis, Land defines social indicators as 'social statistics that (1) are components in a social system model (including socio-psychological, economic, demographic and ecological) or of some particular segment or process thereof ; (2) can be collected and analysed at various times and accumulated into a time series, and (3) can be aggregated and disaggregated to levels appropriate to the specification of the model".[3] In brief, Land's definition regards social indicators as output measures associated with a particular goal area or subsystem. Here are two additional examples of social indicator definitions embracing the category of subsystem variable measures similar to that of Land. In the *Eighth Annual Review*, the Economic Council of Canada puts forward the

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1. Sir Claus Moser, "Social indicators—Systems, Methods and Problem", *The Review of Income and Wealth*, Series 19 (1973) : 143.
2. K. C. Land, "Social Indicator Model : An Overview" in *Social Indicator Models*, eddited by K. C. Land and S Spilerman (New York : Russell Sage Foundation, 1975), pp. 19-21.
3. K. C Land, "On the Definition of Social Indicators", *American Sociologist*, Vol. 6, (1971), p. 322.

view that the goal output indicators "give a broad summary view of levels of, and changes in output", while goal distribution indicators "show distributions of the aggregate output indicators among regions, income groups, ethnic groups, and so forth".[1] The second example is presented in the U.S. Department of Health, Education and Welfare publication *Towards a Social Report.* A Social Indicator

> "may be defined to be a statistics of direct normative interest which facilitates concise, comprehensive and balanced judgements about the condition of major aspects of a society. It is in all cases a direct measure of welfare and is subject to the interpretation that, if it changes in the "right" direction, while other things remain equal, things have gotten better, or people are "better off". Thus statistics on the number of doctors or policemen could not be social indicators, whereas figures on health or crime rates could be".[2]

Goal Areas and Subsystems : To examine and analyze the performance of the social system involves the division of society into meaningful subsystems and areas of concern. Maslow identified five categories of need from the individual's point of view—survival and safety ; security ; belongingness ; esteem and self-actualization, and three categories from the societal's point of view—material well-being ; socio-cultural well-being ; and equity.[3] A planner or an administrator will find these goals too broad to provide sufficient and adequate information by themselves for purposes of policies and plans. Five groupings provided by Sheldon and Land are somewhat broader in scope and detailed in character : (i) socio-economic welfare, including income, housing, leisure, health, education, transportation and public safety ; (ii) social participation and alienation, including

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1. Economic Council of Canada, *Eighth Annual Review Design for Decision-Making,* (Ottawa : Information Canada, 1971), pp. 71-72.
2. U. S. Department of Health, Education and Welfare, *Towards a Social Report,* (Washington, D.C. : U.S. Government Printing Office, 1969, p. 97.
3. A. H. Maslow, *Motivation and Personality,* (New York : Harper, 1954).

family, religion, voluntary associations, and politics ; (iv) consumption behavior ; (v) aspirations, satisfaction, acceptance and morale.[1]

The Economic Council of Canada in its recent study, while outlining a framework for the government decision-making, identifies the following goal areas of public interest and welfare : POLITICAL—(1) Individual rights and responsibility ; (2) National identity ; SOCIAL—(3) Health ; (4) Command over knowledge and skills ; (5) Natural environment ; (6) Man-made environment ; (7) Discretionary time ; ECONOMIC—(8) Final goods and sevices. Each broad area in turn is subdivided into meaningful operational groups. For example, "command over knowledge and skills" is divided into four subareas : fundamental, basic education ; higher education ; other training ; and research. Similarly, health is divided into longevity and morbidity. These subsystems and subcategories serve the starting point for organising knowledge and data required for the development of measures. These social indicators are expected to serve as links between abstract goals and operational policy objectives. For each goal area, it is suggested that there should be indicators of two types : Goal Output Indicators—to give a broad, summary view of level of, and changes in, output ; Goal Distribution Indicators—to show distributions of the aggregate output indicators among regions, income groups, ethnic groups, and so forth.[2]

III. Social Indicators and Regional Ecconomic Planning

Social indicators have a special role in economic planning at the subnational level. A comprehensive planning, neglected till recently, is becoming increasingly an important element of policy in most of the developing as well as developed countries. The development strategy has become essential because economic development seldom takes place uniformly over all the regions of a nation. Even the most developed countries are not without their unique problems of lagging regions. In contrast, the regional disparities in developing

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1. E B Sheldon and K C. Land, "Social Reporting for the 1970's : A Review and Programmatic Statement", *Policy Sciences An International Journal*, Vol. 3 (1972), 137-151, (Published by Elsevier Publishing Company, Amsterdam).
2. Economic Council of Canada, *Eighth Annual Review : Design for Decision-Making*, (Ottawa, 1971), pp. 68-76.

countries are of still deeper concern. This is all the more so since a comprehensive study suggests that the regional disparities in income levels widen, at least in the initial stages of development, unless special measures are undertaken.[1]

Comparable and reliable time series of economic measures like per capita income by regions, usually considered minimum required for a meaningful economic planning model, are not easy to come by even for many of the developed countries As a matter of fact, whatever economic data are generally available are expressed in terms of regional prices which renders regional comparisons somewhat difficult. In the case of developing countries, some of whom are not publishing their estimates of national income accounts on a regular basis, this type of required regional income data just do not exist. Data difficulties in this regard are clearly demonstrated by the fact that Williamson's time series study of regional economic development was confined to only ten countries. India, for example, a popular example of a less developed country in the literature on economic development, publishes fairly reasonable estimates of its national income accounts, but does not yet officially approve of the state income estimates prepared by various State Statistical Agencies.[2]

There also arises another important question about the extent to which measures like "income originating" can be considered a true indicator of levels of living at the regional level. Actually, the income accruing concept seems to be a better measure in this regard. At the national level, it may often be that income originating does not differ much from income accruing, and even if it does, it is not difficult to estimate net income earned from abroad. But the open nature of regional economies with considerable inter-regional flows

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1. J. G. Williamson, "*Regional Inequality and the Process of National Development*", *Economic Development and Cultural Change*, Vol. XIII, No. 4, Part II, pp. 3-84.

2 For a critical survey of regional income estimates in India, see: (i) M. Mukherjee, National Income of India, *Trends and Structure*, (Calcutta : Statistical Publishing Society, 1969) ; and (ii) Mahinder D. Chaudhry, *Regional Income Accounting in an Underdeveloped Economy : A Case Study of India*, (Calcutta : Firma K. L. Mukhopadhyay, 1966).

of factor income, makes it rather questionable to consider income originating as an appropriate measure of the level of economic activity. The estimation of regional income accruing is, however, a fairly difficult task, beset with problems like the definition of residents and the estimation of inter regional flows of income. Hawaii State of the United States provides a good example of income estimates based on "income accruing" concept. Under the present conditions of nonavailability of income and output data, the regional planning, particularly in the less developed countries, may be done mainly on the basis of non-monetary indicators.

Apart from the data limitations, there are other basis for preferring social indicators at the regional level in developing countries in particular. In an economic planning process, there appears to be some degree of trade-off between reduction in regional income disparities and the rate of national economic growth, at least during the initial development stages. Such a view rests on the assumption that income originating is an accurate measure of the level of living at the regional level. Nair in his empirical study of Indian states, found that the correlation coefficient between per capita *consumption* and per capita income originating at the state level was not of a high order.[1]

There is also empirical evidence to support the view that while regional disparities in per capita income originating increase in the initial development stages, the same is not true of social indicators of levels of living at the regional level.[2] Thus it seems that the location of industrial projects in various regions of a country can be planned on the basis of economic efficiency without serious consequences of possible widening of regional disparities. In other words, by taking appropriate steps to reduce regional disparities in levels of living in terms of other social indicators, the suggested trade-off between rate of national economic development and possible reduction of regional disparities can be moderated considerably.[3] One possible way of achieving this objective is to promote social development in economically depressed regions. Futhermore, such a step might even accelerate national economic development in the long run. This appears to be the case because studies regarding the relationship between social and economic development seem to support the view that if social development outpaces or preceeds economic development in the initial stages, the economic development will be greater in the long run.[1] There thus appears to be a definite need for developing and using social indicators for meaningful regional development planning.

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[1] K. R. G. Nair, *Inter-State Income Disparities in India, 1950-51 to 1965-66*. Unpublished Ph D Dissertation, Delhi University, Delhi, 1975.

[2] Nair, 1975; and Ganguli and Gupta, *Levels of Livings in India, op.cit.*

[3] Kosta Mihailovie, *Regional Development Experiences and Prospects in Eastern Europe*, U N. Research Institute for Social Development, 1972. A R. Kuklinski, (ed.), *Regional Development and Planning*, (Ottawa : 1975).

IV. Education

Social Indicators : Education is an essential instrument as well as an indispensable part of economic and social development. Therefore, we have, though arbitrarily, selected it for a detailed study as a representative goal area. Before presenting an empirical study of the Indian states, a very brief attempt is made here to map out a broad outline of this important sector in South Asia (again, a very arbitrary classification of UNESCO), with a sharper focus on India in terms of financing of education and allocation of sources among various levels of education. In its most recent study of the progress and analysis of education in the developing countries, the World Bank employed a set of the following comparative educational indicators : literacy levels, percentage of Gross National Product devoted to education, percentage of national budgets spent on education, enrolment ratios (various levels), teacher-pupil ratios (various levels and categories—vocational, agricultural, etc.), and annual output (graduates, etc.) ratios.[2]

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[1] N. Baster and W. Scott, *Levels of Living and Economic Growth,* United Nations Research Institute for Social Development (Geneva, 1969) ; D. V. Mcgranahan, C. Rochard Proust, N. V. Sovani, and M. Subramanian, *Contents and Measurement of Socio-economic Development* (New York : Praeger, 1972).

[2] World Bank, *Education Sector Working Paper,* (Washington, D. C. : December, 1974).

(Continued)

Resource Pattern and Crop-Mix in Semi-hilly Areas of Punjab

Balbir Kumar, K. C. Dhawan & Joginder Singh*

Introduction

The population is increasing at a rapid rate in India and the consequently expanding demand for agricultural commodities. The limited farm resources needs a careful exploration of cropping pattern, particularly in the hill areas. In view of the changed farm economy of the Punjab, the possibilities of raising farm production and income through reorganization of available resources and enterprises cannot be ruled out, especially in the hills of Punjab. Since the green revolution has reached almost the saturation point in the plains of the Punjab, the emphasis of raising production should be shifted towards hill areas of the State, where the new technology does not seem to have penetrated to the grass-root because of severity of soil and water conservation problems.

The purpose of this study is to evaluate the resource-mix and cropping pattern in the semi-hill areas of the Punjab. Further, the study also aims at analysing the income on various size groups in the study area. More specifically, the objectives of the study are (i) to examine the resource-mix and resource use on different farm size groups in semi-hilly areas of Punjab, (ii) to analyse the cropping pattern with special reference to foodgrain production.

Methodology

The study was conducted in Anandpur Sahib tehsil of Ropar district of the Punjab because it represents agro-climatic conditions of the hill areas considerably. The sampling design of the study was stratified with village as the first stage sampling units, and the operational holding in the village as the second stage and ultimate units of analysis.

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Four villages namely Agampur, Kalwan, Bajrur and Kulgram were selected randomly from Anandpur Sahib tehsil. A list of operational holdings was compiled for these villages. The total holdings were then divided into small, medium and large in such a way that cultivated area in each group was approximately one-third of the total cultivated area of the selected villages.

Selection of Farm Holdings

A sample of 42 farm holdings was taken, i.e., 14 from each of the small, medium and large farm size group. The farm holdings from all the four selected villages were taken randomly and in proportion to total number of holdings in each size group of the respective villages.

Data Collection

Detailed information in respect of fixed farm resources, variable resources and cropping-mix and input-output for the year 1976-77 were obtained by personal interview with each farmer. Recognizing that it was difficult to analyse individual farms and spell out their resource adjustment possibilities, the resource use data of similar farms were pooled and averaged to arrive at synthetic farm situation for each category to study the various parameters.

Results and Discussion

Structure of Holdings

The operational farm size and pattern of leasing in and out of land are given in Table 1. It is clear from this table that less than 50 per cent of the area owned was irrigated and it went on declining as the size of farm increased. Irrigated area varied from 38.62 per cent to 48.14 per cent as against 77 per cent of the State in 1976-77. Small farms have higher proportion of irrigated area compared to other categories. However, there existed almost no difference between medium size and large size farm with respect to irrigated areas as percentage of total farm size. The analysis indicated that in general the proportion of good quality irrigated land went on declining as the size of farm increased.

Similary, the pattern of operational area was the same as owned land in relation to irrigated and unirrigated area. Further, Table-1 shows that only the small farmers leased in land and even that is insignificant in relation to the land owned by the small farmers. All the categories of farmers leased out land invariably. The acreage of leased out land were directly related to the size of holdings. The percentage of leased out land to owned land varied from 21.90 to 28.57. The percentage was the highest on the large farms. Furthermore, the farmers mostly leased out unirrigated land to landless labourers.

Adoption of modern technology

Although the use of nitrogen as fertilizers for the farm as a whole increased with farm size, yet its use per hectare was the highest on the,small farms. Similar trend was noticed in the use of phosphatic fertilizers. The farmers applied only 35.57, 29.96 and 30.96 per cent of recommended level of nitrogen on small, medium and larger farms respectively, whereas the precentage was zero, 0.92 and 1.26 of phosphate in the kharif season. In rabi season, level of adoption of nitrogen was 45 73, 42.10, 34.01 per cent and that of phosphate was zero, 4.83 and 11.26 per cent of the recommended level. There was absolutely no application of pesticides and weedicides in this area. Maize, groundnut and paddy crops of the study area do require plant protection measures against pests and diseases. Non-adoption of phosphatic fertilizers and plant protection measures reflect low level of technology and capital use in the semi-hilly area of the Punjab. In short, the farmers were operating at low level of technology. A lot of effort on the part of government agencies are needed to make the cultivators aware regarding the modern technology so that they could also harvest the benefit of new technology.

The Cropping Pattern

Maize was the main crop in the kharif season, which constituted 50.49, 33.03 and 27.94 per cent of the total cultivated area on the small, medium and large farm situations respectivly.

Paddy was another important crop raised in the study area. Other crops such as groundnut, sugarcane and cotton occupied relatively small percentage of the cultivated area, whereas oilseeds and vegetables occupied still lower percentage of the total cultivated area. A close perusal of the existing crop-mix revealed that cropping pattern was cereal oriented and maximum area was put under risky crop like maize. The area under foodgrains during the kharif season was found to be 55 08, 37 64 and 37.54 per cent of the total cropped area on the small, medium and large farm situations. The analysis further brought out that the farmers were raising crops for home consumption and a little area was put under commercial crops. Moreover, the small farmers allocated higher percentage of area to foodgrain crops compared to other categories of the farmers.

Furthermore, wheat in the rabi season occupied 51.15, 47.79 and 43 17 per cent of the total cultivated area on the small, medium and large farms respectively. The other important rabi crop was gram which comprised 6.89, 2.21 and 0.58 per cent of the total area on small, medium and large farms respectively. However, other crops, such as oilseed, vegetables, etc. were raised on a very small chunk of the area. Further, intensity of cropping was 140 33, 118.64 and 111.35 on the small, medium and large farms respectively which was much lower than 151 15 in 1976-77 for the state as a whole.

Overall the examination of existing product-mix revealed that the farmers of hilly area followed old crop-mix which was prevalent about a decade ago in the plains of the Punjab and product-mix is cereal-oriented to meet the requirement of the farmers' family. This might be atributed to low level of irrigation facilities as well as low level of adoption of modern technology. Besides other constraints, meagre irrigation facilities compelled the farmers to allocate more area under low income and risky crops •because no alternative to maize was available to the poor farmers of this area. A small percentage of the area was devoted to the commercial crops, such as cotton, sugarcane, oilseed and vegetables, even that was just enough to cater for the family needs for 'Gur' cloth and oilseeds. Further, higher cropping intensity on small farms indicated that they made intensive use of land compared to other farmers, which may be attributed to higher proportion of irrigated area on the small holdings.

Farm Income

In order to have an idea of the relative performance of different sizes of farm, gross returns, variable expenses and returns to fixed farm resources were calculated and are presented in Table.[2] With the increase in the size of farm, gross return, in absolute terms, increased from Rs. 5951.53 on the small farm to 9612.57 and 16246.10 on medium and large farm respectively. However when the figures of gross returns were converted on per hectare basis, the reverse trend in gross return was observed i.e. gross return declined as the size of farm increased. This phenomenon again was largely attributed to higher proportion of unirrigated area on the medium and large farms. Anyhow, the analysis of variance indicated no difference with respect to gross return per hectare among different categories of farms. The analysis of variance of gross return in different farm sizes is given in appendix-A.

Table-2 further shows that variable expenses and return to fixed farm resources (RFFR) increased with the increase in the size of holding. Variable expenses and RFFR on per hectare basis were Rs. 859 75, 1091.57 on the small farm, Rs. 641.56 and 1131.98 on the medium farm and Rs. 663 63 and Rs. 912.37 on the large farm respectively. Again, the analysis of variance did not show any difference within these parameters on different sizes of holdings.

Low income on all the holdings illustrates that the farmers of this area did not make the best use of available resources and there was a lot of scope to increase income through reorganization of the resources. A study conducted by Grewal* and other indicated that RFFR could be raised by 7.36 per cent to 14 00 per cent just by reorganizing the resources and following optimal plans prepared at the existing technology with the same resource endowment.

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* Grewal *et al*, "A Study on Economic Potentials of Grain Prodution in the Punjab, Deptt. of Economics & Sociology, P.A.U. Ludhiana, 1975-76.

To sum up, more than 50 per cent of the cultivated area in the study area (semi hilly area) was unirrigated, which increased as the size of holding increased. Invariably, all categories of the farmers leased out land, particularly unirrigated land to have an amount of fixed income. With regard to the use of key inputs, such as fertilizers and pesticides, the farmers operated at very low level of technology compared to the recommended level of technology. The farmers adopted only 29.96 to 35.57 per cent of recommended level of nitrogen.

Product-mix was cereal-oriented, which was practised in the plains of the Punjab a decade ago. Besides other constraints, inadequate irrigation facilities forced the farmers to put more area under low income generating and risky enterprises as no alternative was available to replace maize, which occupied the maximum area. Moreover, the farmers allocated insignificant area to cash or commercial crops.

Low income generated by the existing crop-mix brought out that the farmers did not follow optimal enterprise-mix and the income on the average, could be raised 7.36 to 14.00 per cent just through reorganization of resources. It could be further enhanced by applying higher doses of fertilizers and intensification of irrigation resource endowment.

On the basis of this analysis, it suggested that a lot of efforts have to be made by government agencies to create awareness among the farmers in regard to the importance of modern methods of cultivation. More emphasis should be laid to improve resource position of the cultivators, particularly irrigation facilities and the use of chemical fertilizers More importance should be given to soil and water conservation programme so that the farmers may be educated to allocate more area to income-bright enterprises in the short run and alternative to be found to shift some areas from maize to other crops or enterprises in the long-run so that income could be further enhanced to improve the lot of the farmers of this area.

Table 1

Average size of operational holding and percentage of irrigated area on different size groups in Anandpur Sahib Punjab, 1976-77.

(area in hectares)

Particulars	Small Farms		Medium Farms		Large Farms		Average
	Area	%age	Area	%age	Area	%age	
Owned land							
i. Irrigated	1.82	48.14	2.68	38.62	5.52	39.42	2.088
ii. Unirrigated	1.96	51.86	4.26	61.38	8.48	60.58	2.507
iii. Total land	3.78	100.00	6.94	100.00	14.00	100.00	4.595
Leased in land							
i. Irrigated	0.04	40.00	—	—	—	—	—
ii. Unirrigated	0.06	60.00	—	—	—	—	—
iii. Total land	0.10	100.00	—	—	—	—	—
Leased out land							
i. Irrigated	0.22	26.50	0.08	5.26	1.03	27.91	0.250
ii. Unirrigated	0.61	73.50	1.44	94.74	2.66	72.09	0.790
iii. Total land	0.83	100.00	1.52	100.00	3.69	100.00	1.040
Operational Area							
i. Irrigated	1.64	53.77	2.60	47.97	4.49	43.55	1.875
ii. Unirrigated	1.41	46.23	2.82	52.03	5.82	56.46	1.766
iii. Total land	3.05	100.00	5.42	100.00	10.31	100.00	3.641

Table 2

Gross Returns, Variable Expenses and Returns to Fixed Farm Resources in the Existing Crop-Mix on Various Farm Situations in Anandapur Sahib, Punjab, 1976-77.

(In rupees)

Particulars	Gross Returns	Variable Expenses	Returns to Fixed Farm resources
1. Small farms	5951.53 (1951.32)	2622.25 (859.75)	3329.28 (1091.57)
2. Medium Farms	9612.57 (1773.54)	3777.23 (641.56)	6135.34 (1131.98)
3. Large Farms	16246.10 (1575.76)	6841.98 (663.63)	9404.12 (912.37)
4. Average	6816.87 (1915.60)	2916.39 (829.34)	3900.48 (1086.26)

* Per hectare parameters are given in parentheses.

Appendix—A

Analysis of various gross returns on different farm situations in Anandpur Sahib, Punjab, 1976—77

Source of variation	Degree of freedom	Sum of squares	Mean sum of squares	Value (F_2. 38)	Value at 5 per cent
Between Group	2	171467.27	85733.64	1.19^{NS}	3.24
Within Group	38	2730586.31	71857.73		
Variable Expenses					
Between Group	2	77525.53	38762.77	2.13^{NS}	3.24
Within Group	38	690337 66	18166.78		
Returns to fixed Farm Resources					
Between Group	2	41295.84	20647.92	$0\ 65^{NS}$	3 24
Within Group	38	1206136 32	31740.43		

* N. S. means non-significant.

Forecast development of coal production

(in million tons)

Country	1978	1985	2000	2020
Australia	75	130	200	300
Canada	24	35	115	200
China	600	725	1,200	1,800
Federal Republic of Germany	90	129	145	155
India	101	135	235	500
Poland	193	200	270	290
South Africa	91	119	233	300
United Kingdom	122	137	173	173
United States	565	842	1,340	2,400
USSR	556	851	1,100	1,800
Others	197	495	639	771
Total	**2,614**	**3,798**	**5,650**	**8,689**

Figures in this table and the article do not include lignite production.

Indebtedness Among Agricultural Labour Households

Sarbeshwar Prasad Verma*

Report of the Rural Labour Enquiry 1974-75 shows that in most of the states the majority of households were in debt ; more than three-fourth of the agricultural households were in debt in the Union Territory of Pondicherry, States of Kerala, Rajasthan, Haryana and Tamil Nadu. The degree of indebtedness among agricultural households has gone up since the early survey of 1964-65. At all-India level this increase was of the order of 6 percent ; it was considerably largar in a number of States, such as Kerala (22%), Gujarat (18%), Tamil Nadu (16%), Orissa (13%), A.P. (10%) and Jammu and Kashmir (9%). Assam is the only exception where the incidence of indebtedness has fallen from 43% to 28% during this period.

The Report further reveals that incidence of indebtedness was higher among the households with land than those without land in all the States. For the whole of india it was 71% among households with cultivated land and about 62% without cultivated land.

At all-India level the average amount of debt per agricultural labour household increased from Rs. 148/- in 1964-65 to Rs. 387/- in 1974-75. The outstanding amount of debt was maximum for Haryana (Rs. 1,318/-) followed by Rajasthan (Rs. 1,128/-) and Punjab (Rs. 899/-). The amount of debt was minimum (Rs. 3/-) for the State of Meghalaya

For the country as a whole the average amount of debt outstanding per indebted agricultural labour household was Rs. 581/- representing an increase of about 139% over that of 1964-65. At the State level it ranged from Rs. 89/- in Meghalaya to Rs. 1,618/- in Haryana. The amount of debt outstanding was above the all-India level in the States of Uttar Pradesh, Bihar, Andhra Pradesh, Tamil Nadu, Gujrat, Karnataka, Rajasthan, Punjab, Hariyana, and Himachal Pradesh. This is shown in the table below.

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* Monghyr, Bihar.

Table

Extent of Indebtedness among Agricultural Labour H H.*

Zone/State	All classes of households Average debt per H.H.		Average debt per indebted H.H.	
	1964-65	1974-75	1964-65	1974-75
1	2	3	4	5
Central Zone	177	441	265	661
U.P.	200	492	280	698
M.P.	143	368	238	588
Eastern Zone	104	221	174	355
Bihar	150	293	212	406
Orissa	73	254	155	422
W. Bengal	51	110	99	206
Assam	52	65	119	230
Manipur	—	90	—	353
Tripura	61	116	119	204
Meghalaya	—	3	—	89
Southern Zone	149	475	239	620
A. P.	175	491	270	658
Tamil Nadu	149	517	249	682
Kerala	78	311	127	372
Pondicherry	—	465	—	512
Western Zone	121	365	241	655
Gujrat	109	443	294	799
Maharashtra	78	257	167	514
Karnataka	196	487	312	750
Goa, Daman, Diu	—	130	—	391
Northern Zone	453	1014	612	1330
Rajasthan	447	1128	585	1434
Punjab	461	894	629	1201
Hariyana		1318		1648
Jammu & Kashmir	131	336	224	498
Himachal Pradesh	—	554	—	992
Delhi	471	—	1060	—
All India	148	387	244	584

Source, Rural Labour Enquiry, 1974-75, Final Report, Indebtedness among Rural Labour Households-Page-64.

* H. H. = Households.

The majority of agricultural labour households were heavily indebted mainly due to their low earnings and with the general increase in the prices of commodities the real value of money has declined. Consequently, the households might have borrowed more debts to maintain their previous standard of living, especially in the context of increasing population. Secondly, with higher per capita money income, the credit worthiness of the borrowers might have also increased since higher incidence of debt is indicative of not only the economic condition of borrower but also of the willingness of the lender to lend money In normal circumstances, a person is unlikely to be able to go on borrowing an ever increasing amount unless the creditor is satisfied of the ability of the borrower to repay the loan within a certain time. It is possible that a part of the increased indebtedness is attributable to the advance payment of wages which the employers like to pay to ensure timely and uninterrupted availability of labour during peak agricultural season. Lastly, with the commercialisation of agriculture, the larger cultivators are reported to be employing, in increasing numbers, regular field labourers. Because of their attachment with the employers such labourers find it easier to borrow money from them at the time of need.

The most important feature is that the poverty stricken workers are not only under debt, but the burden of debt has been increased. This has badly affected the economic conditions of the agricultural labourers. In majority of cases, indebtedness has persisted for generations and along with it existed serfdom with incomes of less than Rs. 30/- (at 1970-71 prices) per month, majority of agricultural labourers live below the poverty line.

The above discussion makes the fact obvious that there has been an increase in the indebtedness of agricultural labour households in India. It is true of both agricultural labour households with cultivable land and landless agricultural households. The incidence has increased both at all India level and at 'states level, Assam offering the only notable exception.

Multinational Corporations : The Exploiting Feuds–I

Som Deo*

The emergence of the Multinational Corporations (hereinafter called MNCs) on the world scene marked the beginning of a new era in international economic, political and cultural relations between rich and poor countries. Whether one hails them as an embryonic form of a new world order or decries them as yet another source of potential economic friction they are a major fact of economic, political and cultural life in developing countries.

The MNCs, because of their great power to plan economic activity, represent an important step forward over previous methods of organising international exchange. As they eliminate the anarchy of international markets and bring about a more extensive and productive international division of labour, they release a great source of latent energy. However, as they cross international boundaries, they pull and tear all the social and political fabrics and erode the cohesiveness of national states. Whether one likes this or not, it is probably a tendency that cannot be stopped.[1]

Meaning and Genesis

MNCs have always been the subject of controversy. Economists and other experts are not unanimous over the meaning of the MNCs. The characteristics feature of MNCs is that they are essentially enterprises which in their country of origin have attained the dimensions of a monopoly and which are closely linked within powerful financial groups of monopolist state capitalism.[2]

Simply the term MNCs may be understood as the firms operating in more than one country. "Firms that participate in international business solely by exporting or by licensing technology are not multinational".[3] Some observers are of the view that "a

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* University Commerce College, University of Rajasthan, Jaipur.

firm is multinational if more than 25% of its profits are produced outside its home country". Raymond Vernon in his 'Sovereignty at Bay' says that a firm that controls operations in at least six countries is the multinational corporation. In the Marxist analysis, the MNC is an expression of economic imperiaism and concentration in the phase of late capitalism, which necessarily runs into conflict with major national and labour interest.[4]

The working of these giant organisations is nothing new in international trade and commerce. They were a characteristic form of the mercantilist period when large joint-stock companies, e.g. The Hudsons Bay Co., The Royal African Co , The East India Co., to name the major English merchant firms organised long distance trade and commerce with USA, Africa and Asia [5]

The 200 years of British colonial domination over the destinies of the Indian sub-continent started with the formation of the East India Company. It started as a Trading Company and over a period of years the British overlords not only exploited India commercially but also "annexed" India to the British Empire over which, it was said, 'the Sun never sets'. The same is also true in the case of other developing countries. L. Brown, a leading western expert on MNCs, writes that the Sun never sets on the British Empire. Today it already sets on it. However, the Sun does not set on dozens of such Corporate Empires as Mitsubishi, Central Electric, Volks-Wagen, Unilever or Chrysler.[6]

MNCs are claimed to be the agents of world economic development. They address themselves not to the demands of the few but to the urgent needs of the overwhelming many. In a way it can be termed as a new revolutionary ideology thrown up in response to recent technological changes "The basic decisions of the MNCs with respect to marketing, finance, production and research are made on the basis of the alternatives open to it anywhere in the world".[7]

On the one hand the MNCs, possessing a ramified international network of subsidiaries and business ties in the 'Third World', control a considerable part of its natural and manpower resources. On the the other hand, concentrating in their hands capital and the fruits of the scientific and technological revolution that are urgently needed for development, the MNCs act as the most typical representatives of imperialism in the post colonial epoch.[8]

An Operational Review

Starting from small beginnings these corporations over the period have come to assume such immense complex dimensions by a combination of expertise, amalgamation of companies and manipulation of techniques that they are dominating the 'commanding heights' of the economy of the developing nations.

Out of an estimated gross world product of nearly 3000 billion dollars in 1970, the share of MNCs was 450 billion dollars constituting 15%. It is estimated that the share of these MNCs in the gross world output would cross over the 50% by 1985. This fifty per cent share in the gross world product will be produced by 200 giant corporations spread over many countries. The alarming prospects have been the cause of stir in many global forums. The growing influence of these giant corparations on the world economy has led the different economic bodies like Economic and Social Council, UNCTAD, EEC, OECD and the like to discuss the implications of the spread over of these MNCs but no concrete steps could have been taken so far. It has been estimated that at the end of 1971 the total stock of foreign direct investment by major MNCs was of the order of 165 billion dollars Of this about one-third is invested in the developing countries.

The interesting feature about the MNCs is that out of a total foreign direct investment of 104 billion dollars by the end of 1967, developed countries accounted for 71 billion dollars, and developing countries accounted for 33 billion dollars. All other countries joined, the USA is investing heavily in the Western Hemisphere. The share of Switzerland in this region was 76 per cent, Canada 93 per cent, FRG 78 per cent, and that of the Netherlands, Italy and Japan more than 55 per cent each. The U.K. and Japan were the only countries which made more than one quarter of their investments in Asia. The UK, USA France and Japan were only countries which made significant investments in the Middle East.[9]

In 1974 the UN Economic and Social Council published a special study on the activities of the MNCs. Of the total volume of the investments of the MNCs abroad, 18 per cent are in Latin America, 6 per cent in Africa, 5 per cent in Asia and 3 per cent in the middle East. The distribution percentages of the branches of MNCs in Asia, Africa and Latin America are almost the same. About

28 per cent of the investments of US MNCs abroad, 38 per cent of the British, 44.8 per cent of the French, 33.8 per cent of the West German and 60 per cent of the Japanese go into the devoloping countries. Up to 70 per cent of the investments of the US multinationals in the 'Third World' are concentrated in the Latin American countries, two-thirds of the investment of the French multinationals are concentrated in Africa, mainly in France's former colonies, and about 60 per cent of the foreign investments of the British multinationals in Great Britain's former colonies in Asia and Africa.[10] The MNCs are enjoying a greater profitability. For instance, Mitsubishi. along with its establishments in India had an annual group turnover of 18,129 million dollars in 1972 and their profit before tax for the same year was 132 million dollars. British American Tobacco had an annual turnover of £2037 million in 1972 and profit before tax for the same year £161.6 million. The corresponding figure for the IBM was 9.53 billion U S dollars and 2 43 billion U.S. dollars respectively.[11] By their sheer annual turnovers and profits before taxes, the MNCs have the capacity to throw the economy of a developing country into the shade. Annual sales of 100 million dollars are sufficient to exercise effective influence on the economy of a developing country.'[2]

The MNCs' average rate of profit in the Third World is higher than that in the developed world. Thus the ratio of the bulk of profits to the balance capital cost obtained by US MNCs in the developing nations is 17.5 per cent and in developed countries it is only 7.9 per cent. By this figure of profit earned by MNCs in developing countries the exploitation of the developing world can be clearly seen. It is appropriate to say that the aim of the MNCs always has been the maximisation of profit by all means. Such higher profitability results in the accumulation of income in the hands of MNCs rather than those of the host country (i.e. the developing ones). Two examples can be cited here about US multinationals.

Between 1950 and 1965 the transfer of profit on US investments from the Third World countries stood more than 264 per cent of the original investments, as compared with 74 per cent from the developed countries. The profit received by De Beers in Tanzania between 1958 and 1967 recouped more than thirty times

Exhibit I

Average profitability on direct investment of US companies, 1960-1970 (Per cent)

	All Sectors	Oil	Manufacturing Industry
Average for all operations	12.6	13.8	11.8
Average for foreign operations	13.2	14.6	11.8
In developed countries	9.7	3.5	11.8
In the Third World	17.4	27.5	11.9

Source : CIC Brief, An Examination of Multinational Corporations, page 36.

Exhibit II

Profits, interest, royalities and management fees as percentage of the book value of U S investments.

	1970	1971	1972
All Industries			
Developing Countries	20.1	21.8	22.3
Developed Countries	13.0	13.5	15.0
Manufacturing			
Developing Countries	14.7	14.1	15.8
Developed Countries	14.9	15.4	17.9
Petroleum			
Developing Countries	28.6	35.0	35.3
Developed Countries	5.3	6.0	7.2

Source : Survey of Current Business, September, 1973.

the original investment. About 200 MNCs each owns assets running into thousands of millions of dollars and disposes of resources exceeding the GNP of most of the small developing countries. Thus the sales of General Motors exceed the GNP of any developing country except India, Brazil, Mexico and Argentina.

(Continued)

New Farm Technology and Shifts in the Pattern of Income Distribution

A. J. Singh[1] & A. S. Kahlon[2]

The adoption of new farm technology has undoubtedly resulted in sharp increase in agricultural incomes. But due to differences in the ownership pattern of the physical resources, and also differences in the levels of education, and greater access to credit and extension agencies, certain categories of farmers seem to have been able to reap greater benefits from the new technology as compared to the relatively underprivileged categories. The increasing disparities in income distribution have been a cause of great concern to the academicians and the policy-makers. (1, 2, 3, 4, 5, 12). However, a certain section of the people strongly believes that there is no adverse shift in the pattern of income distribution. (13, 14). This article attempts to examine the shifts in the pattern of income distribution over time with the help of different alternative criteria which could be adopted to tackle the problem.

Methodology

In order to examine the shifts in farm business income distribution, it was imperative to search for some benchmark. Such a benchmark was fortunately available in the "Studies in the Economics of Farm Management in Punjab" which were conducted over the periods 1954-56 and then from 1967-68. The former investigation pertained to Amritsar and Ferozepur districts and the latter exclusively for the Ferozepur District. So for purposes of this study, the data were already available at two points of time for Ferozepur and the data for 1973-74 were specifically collected for comparing the green revolution period with the pre-green revolution period. A peculiar feature of this study is that the sample for 1973-74 was exactly the same set of farmers which enabled us to catch the true nature of the changes in the distribution of incomes.

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Measuring Changes in Size Distribution of Income

The basic problem involved in measuring changes in an income distribution relates to comparison of two frequency distributions pertaining to different points in time. There are two objectives in seeking to compare the two distributions, i.e. (i) to judge whether the distribution has become more or less equal, and (ii) to quantify the degree of inequality at different points of time or between different socio-economic categories.

As regards the ordinal ranking of the distributions, the Lorenz Curve is a useful technique. A distribution is preferable to another if the Lorenz Curve for the new distribution is closer to the line of equality than the old distribution.

Measures of Income Inequality

There are various measures which are used to quantify the differences in inequality between two distributions. An appropriate measure should possess the following two characteristics.

1. It should be unaffected by equal proportional increases in all incomes so that if the income distribution for 1973-74 is simply a scaled up version of that for 1967-68, then it is regarded as characterised by the same degree of inequality.

2. It should be sensitive to disproportionate changes at all levels of income so that if from 1967-68 to 1973-74 the incomes of lower income farmers increased proportionately more than the increases of the higher income farmers, this ought to lend to a strictly positive reduction in the index of inequality (and not merely leave it unchanged).

1. The Pareto Index

This index is derived from the Pareto's Law which in its simple form states that the distribution of income in the higher income strata can be described by the equation

$$N=AX^{-L} \qquad (1)$$

Where N is the number of persons receiving an income X or more and A and L are two parameters.

Equation (1) is usually estimated in its logarithmic form.

$\text{Log } N=\text{Log } A\text{-}L \text{ Log } X$

When the number of persons receiving an income X or more is calculated and plotted against X on a double log paper, it gives a straight line with a negative slope. Pareto's L, the slope of the line, is treated as an index of inequality and vice-versa.

2. The Gini Concentration Ratio

This ratio is known after Corrado Gini and it is being used increasingly as a measure of relative distributional inequality. The ratio can be approximated either from the Lorenz curve or from the mean difference.

When approximated from the Lorenz Curve, it represents the proportion of the area under the diagonel that lies between the diagonal and the Lorenz Curve. If the area inside the Lorenz Curve is designated as A and that outside the Lorenz Curve B, the ratio would be $\frac{A}{A+B}$. Hence the range of this ratio is from O to 1, zero meaning perfect equality and 1 perfect inequality. When computed from the mean difference, it may be defined as :—

$$\sum_{i=1}^{C=U} \sum_{j+1}^{U} f_i \quad f_j \quad (x_i - x_i)/2 \ \bar{x} \ N$$

Where N is the number of income classes, f_i is the frequency of each income class, x_i is the mean income of each class and x_j is the mean of the distribution and N is the total number of individuals.

Hence, the ratio is one-half of a weighted average of all absolute differences between all possible pairs of incomes.

The Gini Concentration Ratio possesses both the important properties that an ideal measure of the inequality should have. First, it is unaffected by equal proportional increases in all incomes and, secondly, it is sensitive to disproportionate changes at all levels of income, but attaches more weight to transfers affecting middle income classes.

3. Standard Deviation of Logarithms of income

This is another commonly used measure of inequality which may be defined as :—

$$S-D=\frac{I}{N} \quad (\text{Log } x_i - \text{Log } x)^2$$

Where N is the total number of individuals and x_i is the income of each individual.

This measure is in particular useful when income is approximately log-normally distributed. (A variable is log-normally distributed when its log follows normal law of probability). Like the Gini Concentration Ratio, this measure is also invariant with respect to proportional shifts in all income and is sensitive to disproportionate change in levels of income.

4. The Coefficient of Variation

This is also a popular measure of inequality. It is defined as:—

$$CV = \frac{I}{N} \quad \overset{N}{\underset{i=1}{}} \; (x_i - x)^2 \quad {}^{\frac{1}{2}}\Big/_{x}$$

Where N is the total number of individuals and x_i is the income of each indvidual. Like the Gini Concentration Ratio and the S.D. of logs of incomes, this measure is also unaffected by proportional increases in all incomes and is sensitive to disproportionate changes at all levels of income. It attached equal weights to transfers at different levels of incomes.

5. Atkinson has argued that the conventional approach of examining the problem of inequality in the distribution of income through the use of such summary statistics as the Gini Coefficient, coefficient of variation or the relative mean deviation is misleading due to two reasons (8). First, because the use of these measures often serves to obscure the fact that a complete ranking of distribution cannot be reached without fully specifying the from of the social welfare function. Secondly, examination of the social welfare functions implicit in these measures shows that in a number of cases they have properties which are unlikely to be acceptable and in general there are no grounds for believing that they would accord with social values. He was, therefore, proposed a measure, which makes explicit value judgements about the relative sensitivity to transfers at different income levels.

According to him :

Inequality Index $I = I - Y_i/U \quad f(Y_i)$ when $E = 1$

and $I = i - II \quad (Y_i/U)\, f\,(Y_i)$ when $E = 1$

where u indicates the mean of the distribution and epsilon is the inequality aversion parameter. A higher E implies a larger weight to transfer at the lower end of the distribution and less weight to transfers at the top.

6. Other Measures of Inequality

There are also a few other measures of dispersion such as the variance, the relative mean deviation, the inter-quartile range, etc. that are sometimes used for measuring income inequality. Of these measures, the variance is rejected because it is affected by equal proportional increases in all incomes. The relative mean deviation and the inter-quartile range are rejected because these are unaffected by transfers between people on the same side of the mean.

Recently Elteto and Frigyes have proposed the following new inequality measures. (7)

a) $u=m/m_1$

b) $v=m_2/m_1$

c) $w=m_2/m$

Where $m=E\ (X)$, $M_1=E\ (x/x \angle m)$, $M_2=E\ (x/x>m)$, and X denotes the income of an income unit selected at random. In other words, m is the mean income, m_1 is the mean income of those with an income smaller than m_1, and m_2 is the mean income of those with an income equal to or greater than m. The measure V may be regarded as a measure of inequality for the entire income distribution, while U and W indicate the inequalities of the lower part and the upper part of the distribution respectively. Clearly, $V=UW$ so that only two of the three measures are independent.

The authors of these inequality measures argue that these measures have plausible economic interpretation and are easy to compute even from grouped data. They suggest, in particular, that their measures are more sensitive than the Gini Coefficient because these have a wide range of variation but ignore the fact that they are completely insensitive to transfers between people on the same side of the mean. Because these measures are not sensitive to transfers on the same side of the mean, they have not been considered for our purposes.

Pareto Distribution

In order to examine whether farm business income distribution conforms to Pareto's law or not, the function

$N_x=AX^{-v}$ which is linear in double logs was fitted, N_x is the number of farm households earning income X or more and A and v are parameters. The value of V turned out to be 0.7593, .7970 and 1.04 respectively for the years 1954-55, 1967-68 and 1973-74 respectively., These results clearly invalidated the Pareto's law of income distribution which restricted the value of the parameter v between 1.2 and 1.9.

Table III : Estimates of Parameters of Paretx's Distribution for the Study Area, 1954-55, 1967-68 and 1973-74.

Year		Function	N*
1954-55	$\text{Log } N_1 =$	$-1.010641+0.7595004 \text{ Log } X$	0.7695*
1967-68	$\text{Log } N_2 =$	$-1.5594338+0.797044 \text{ Log } X$	0.6612**
1973-74	$\text{Log } N_3 =$	$-2.91766645+1.0410319 \text{ Log } X$	0.7871*

** Signifitant at .01 probability level.

* Significant at .05 probability level.

Shifts in the Distribution of Farm Business Income deciles

The ordinal ranking of the size distribution of farm business income in the study area is analysed in Table 1 for 1954-55, 1967-68 and 1973-74.

It will be seen that the relative share of the first four deciles has been continuously on increase from 12.32 per cent in 1954-55 to 13.85 per cent in 1967-68 and 14.91 per cent of total farm business income in 1973-74. On the other hand, the share of top five deciles has been continuously on the decline over the period from 80.85 per cent in 1954-55 to 80.30 per cent in 1977-68 and further to 78.66 per cent in 1973-74. So, contrary to general impressions there is a gradual trend towards a more eqalitarian distribution of farm income as between different size categories of farm households.

Table 1 : Relative Shares of Aggregate Income Received by Various Decile Groups of Farm Families in 1954-55, 1967-68 and 1973-74.

	Percentage of aggregate income		
Decile group	1954-55	1967-68	1973.74
First 10 per cent	0.94	1.66	1.76
Second	2.87	2.83	3.25
Third	3.64	4.25	4.51
Fourth	4.87	5.11	5.39
Fifth	6.83	5.85	6.43
Sixth	8.21	7.96	7.71
Seventh	10.27	10.09	9.96
Eighth	14.05	12.63	12.51
Ninth	17.56	17.08	16.71
Tenth	30.76	32.57	31.77
All Groups	100.00	100.00	100.00

Quantification of the Difference in Income Inequality

Table II shows the inter temporal shifts in income inequality through three different indexes for each of the zones separately. It would be seen that generally speaking the three indexes yield similar ranking of the distributions. The results differ in very few cases in which the Lorenz Curves of the two distributions intersect. (10,11),

Having recorded and compared the selected indexes of income inequality, let us now turn to statistical significance of the difference in income inequality. A component of the most appropriate index for this purpose is the variance of the logarithms of the incomes (11).

Table II. Selected Indexes of Income Inequality in the Study Area, 1954-55, 1967-68 and 1973-74

	1954-55			1967-68			1973-74		
	S.D.L.	G.C.R.	C.V.	S.D.L.	G.C.R.	C.V.	S.D.L.	G.C R.	C.R.
Zone I	.2942	0.24	1.12	.20	0.41	.77	.2300	0.28	0.51
Zone II	.4497	0.29	.68	.45	0.44	1.03	.7121	0.32	0.64
Zone III	.4117	0.36	.76	.43	0.44	.97	0.45	0.47	1.00
Zone IV	.4263	0.33	.85	.44	0.45	.99	.43	0.42	.82

As a pre-requisite to the statistical comparison of variances, it was found necessary to test the data for lognormality of income distribution at the three points of time. The function Probit Y=a+b log x was fitted. The results of the analysis clearly indicated that income distribution followed the lognormal law in all the years for which this functional form was tried. So we made use of the F test assuming that (1) the income was lognormally distributed with mean and variance σ^2 and (2) σ_1^2 and σ_2^2 are independent and unbiased estimators of σ_1^2 and σ_2^2 respectively. F values were found to be significant at 5% level indicating that significant changes in the degree of inequality had taken place over the period of analysis.

Table IV : Function for per household income in the study area 1954-55, 1967-68 and 1973-74.

Year	Function	R^2
1954-55	Probit= 1.442586+2·169 17 log x	.911628*
1967-68	Probit= -6.051282+2.790004 log x	.832938*
1973-74	Prebit= -8.053906+3.312293 log x	·882667*

* Significant at P=.01 level,

An attempt was also made to estimate the values of Atkinson's[*] Index of Inequality of Farm Business Income in the Study Area for 1968-69 and 1973-74 and the results, in general, support our earlier conclusions. For any given value of epsilon, the value of the Atkinson's measure also indicate that farm business income inequality declined over the period 1968-69 to 1973-74. Further, in 1968-69 (assuming an inequality aversion parameter (=2), only 30 per cent of the farm business income were required to give the same level of social welfare to the farmers as they enjoyed in that year, if it were equally distributed. However, in 1973-74 about 52 per cent of income were required to give the same level of social welfare, if it were equally distributed at the same level of inequality aversion. Due to greater equality of distribution of farm business income in 1973-74 compared with 1968-69, the potential gain from redistribution of income, which was equivalent to raising national income by 70 per cent in 1968-69, declined to only 48 per cent in 1973-74.

Conclusion

From the foregoing analysis of inter temporal change in farm business income distribution, it can be concluded that the new farm technology has resulted in a trend towards more even distribution of farm business incomes rather than aggrating income inequalities. May-be, initially the inequalities might have increased but with the diffusion of the benefits of new farm technology to all the categories with the passage of time, the tendency towards a more equal inter-size distribution of incomes has begun to show itself more prominently. It appears that the benefits of the new technology which were monopolised and grabbed by the larger farmers because of their credit position and social status are getting more widely diffused now. Further, the governmental policies regarding land reforms have also resulted in more even distribution of land holdings. Besides, increasing population pressure on land has also evened out the ownership-pattern of holdings. Another reason accounting for this tendency is the provision of irrigation facilities—minor and major. Moreover, the small farmers are increasingly resorting to leasing in more areas to enlarge the size of their operational holdings. All these factors have the cumulative effect of reducing inequalities in income distribution.

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Comparative Advantage of Wheat Production in West Bengal

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I

This exercise starts with the hypothesis that the State of West Bengal has neither absolute nor comparative advantage in production of wheat vis-a-vis the agriculturally advanced and the traditionally wheat growing State like Punjab, that its advantages are greater in production of paddy and that, on economic grounds strictly, it should concentrate on production of paddy and jute, although wheat may commend itself in this State too on agronomic, social and strategic consideration. The well known theories of absolute differences and comparative differences in costs of production of international economics which apply well to inter-regional and internal trade under an open economic system are applied to the rates of return of principal crops estimated on the basis of data contained in the relevant reports of the Directorate of Economics & Statistics, Govt. of India, of the 1970's to establish the validity of this hypothesis.

II

The theories of absolute and comparative differences in costs can be expressed algebraically thus :

I. $\frac{a_1}{a_2} < 1 < \frac{b_1}{b_2}$: Absolute differences in costs

II. $\frac{a_1}{a_2} < \frac{b_1}{b_2} < 1$: Comparative differences in costs.

where a_1=cost of production of paddy in State I : West Bengal, a_2=cost of production of paddy in State II, say, Punjab, b_1=cost of production of wheat in State I and b_2=cost of production of wheat in State II. In case I, West Bengal has absolute advantage over State II in the production of paddy and State II has an absolute advantage of wheat. In case II, West Bengal has an absolute supreriority over State II in the production of both the crops but its superiority is greater in the production of a : paddy than in the production of b : wheat. In such a case State I : West Bengal, should concentrate on production of paddy and State II on wheat purely on economic considerations.

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III

The estimated rates of return per hectare for 1970's for wheat, paddy and jute for West Bengal and some other constituent States of India are presented in a table below. The formulae used to compute rates of return (R) with respect to total cost (C) as well as with respect to its different components are :

I. $\frac{R-C}{C}$X 100 : Rate of return regarding total cost.

II. $\frac{R-B}{B}$X 100 : Rate of return regarding Cost A_2

III. $\frac{R-A_2}{A_2}$X 100 : Rate of return regarding cost A_2

IV. $\frac{R-A_1}{A_1}$X 100 : Rate of return regarding Cost A^1

where A_1=cost paid out by an owner-operator; $A_2=A_1$+rent of leased in land=costs paid out by a tenant cultivator; $B=A_2$+rental value of owned land+interest on owned fixed capital; and C=B+ inputed value of family labour (imputation being done at the wages for attached farm servants).

It appears from the table that Cost C/ha for wheat for the crop year 1975-76 in West Bengal at Rs. 2460.68 exceeds the return R/ha at Rs. 2234.25 (value of by-product and main product combined) evincing negative rate of return of -9.2 percent. This implies a loss 9.2 Paise/Rupee of expenditure in wheat cultivation in West Bengal. The corrresponding rates of return for Punjab are positive at 28.1 percent and 8.33 percent for the crop years 1974-75 and 1976-77 respectively. The fact that the rates of return with reference to other elements of cost of production of wheat in West Bengal are positive for the crop year in question commends its cultivation to the farmers as an off-season job and in plots which otherwise remain fallow for the season, especially the small and marginal farmers and tenant cultivators with zero or very low opportunity cost of their labour, but the positive rates of return are much more substantial with respect to the corresponding components of cost for Punjab for the years covered under this study. The rates of return/ha for wheat are found to be much more attractive for the two other traditionally wheat growing States of Himachal Pradesh (1973-74) and Uttar Pradesh (1971-72). On the other hand, the rates of return/ha for paddy for the crop year 1975-76 have been observed to be positive and substantially higer at 9.7 percent, 33.4 percent, 113.3 percent and 135.2 percent with reference to C, B, A_2 and A_1 respectively in West Bengal. But for Punjab, the rates of return/ha for paddy with reference to Cost C are found to be negative at -2.50 percent and -10.32 percent respectively for the crop years 1971-72 and 1972-73, This indicates that farmers growing paddy in Punjab are increasingly losing on their outlay in this respect to the extent of 2.50 to 10.32 Paise/Rupee, These show that, notwithstanding limitation of observations and differrence in reference years, the State of West Bengal's relative advantage in production of wheat is less and that in production of paddy is more vis-a-vis other States covered in this study. The rates of return for cultivation of jute in West Bengal for the crop year 1972-73 and the subsequent years are found to be positive with reference to Cost C making it more attractive to farmers than cultivation of wheat.* The details in this respect for 1973-74 and 1977-78 are given in the table below. The fact that still areas under and production of wheat are of late growing in the State has to be explained by agronomic and genetic improvment, low or zero marginal productivity of farm people due to absence of alternative job opportunities, deficiency in production of paddy and other cereals and other techno-economic factors.

VI

That there is enough scope for reallocation of resources among the crops to maximise returns from farming is evidenced from the extant wide intra-State and inter-State variations in returns per unit of cost farming.**

V

Despite absence of absolute and comparative advantages in proproduction of wheat, the State of West Bengal has a good prospect

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* K. Sain. Economics of Wheat Production. Economic Affairs, Vol. 20, Nos. 1-2, Jan.-Feb., 1975, pp. 27-39.

** Ibid.

ESTIMATES OF RATES OF RETURN FOR CULTIVATION/PRODUCTION OF WHEAT AND PADDY IN SOME STATES OF INDIA DURING 1970s

State, year & crop	Yield/ha in qtls,	Cost C/qtl. in Rs.	Cost C/ha in Rs.	R=Value of output/ha (Main+by-product) in Rs.	Rate of return per hectare : P. C.			
					$\frac{R-C}{C} X\ 100$	$\frac{R-B}{B} X\ 100$	$\frac{R-A_2}{A_2} X\ 100$	$\frac{R-A_1}{A_1} X\ 100$
W B. Wheat 75-76	19.90	113.99	2460.68	2234.25	-9.2	4.0	46.2	46.3
W.B. Paddy 75-76	19.64	79.63	1908.46	2094.62	9.7	33.4	11.33	135.2
Punjab Wheat 74-75	27.00	87.76	2668 65	3420.15	28.1	41.0	138.6	152.3
Punjab Wheat 76-77	22.74	101.39	2611.89	2831.41	8.33	17.83	77.55	85.17
H.P. Wheat 73-74	9.44	96.34	1084.20	1728.50	59.4	97.6	245.9	265.9
U.P. Wheat 71-72	21.61	50.38	1408.62	1940.78	37.7	54.3	147.2	150.1
U.P. Paddy 76-77	20.42	82.41	1868.92	1553.33	16.88	0.48	54.36	56.33
W.B. Paddy 76-77	20.18	85.31	2073.73	2553.11	25.29	45.00	141.57	146.25
Punjab Paddy 71-72	37.70	52.43	2073.33	1986.32	-2.50	9.06	54.96	63.06
Punjab Paddy 72-73	34.66	59.03	2059.84	1847.17	-10.32	0.04	39.02	46.51
W.B. Jute 73-74	15.30	103.43	1774.91	2102.08	18.43	52.90	150.79	154.79
W B. Jute 77-78	15.21	165.95	2745.29	3139.75	14.37	40.71	125.75	132.23

Sourc : Reports of the Directorate of Econs. & State., Govt, of India.

of expansion of area under wheat and improvement in its quality due to chronic deficiency of the State in respect of cereals, peculiar demographic features and other strategic and technical factors.

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World Exports by Major Areas, 1960-79

(percentage shares)

	1960	1970	1973	1074	1979
World[1]	100	100	100	100	100
Industrial countries	64	69	68	63	64
Australia, New Zealand and South Africa	3	2	3	2	2
OPEC	7	6	7	15	13
Other developing countries	15	12	12	12	13
Eastern trading area	12	11	10	9	9

1 Components may not add to totals because of rounding.

Data : GATT, International Trade, various issues.

World Trade by Major Commodity Groups, 1960-79

(percentage shares)

	1960	1970	1973	1974	1979
Total[1]	100	100	100	100	100
Agricultural products	32	21	19	18	16
Ores, minerals, and nonferrous metals	7	7	6	6	4
Fuels	10	9	12	20	20
Manufactures	51	62	64	56	60

1 Excluding commodities not classified according to kind. Components may not add to totals because of rounding.

Data : UN, Trade data tapes ; and GATT, International Trade, various issues.

Central Interim Budget for 1980-81

In the Budget for 1980—81 which is now being presented for purposes of 'vote on account', budgetary support for Central Plan is placed at Rs. 4500 crores. Government is considering revamping of the present scheme of 'food for work' to make it a more potent instrument of employment generation. For the present, therefore, a provision of only Rs. 70 crores is being made in the Budget for the existing scheme. Taking this also into account, budgetary support for Central Plan will be Rs. 4570 crores against the Budget estimate of Rs. 4411 crores for 1979-80. Extra budgetary resources for the Central Plan are estimated at Rs. 2003 crores next year as against Rs. 1604 crores in the current year's Budget. The total Central Plan outlay for next year is thus placed at Rs. 6573 crores as compared to Rs. 6015 crores in the current year's Budget.

Central assistance for States' and Union Territories' Plans, including the schemes of the Rural Electrification Corporation and assistance under 'Income Adjusted Total Population' formula, is placed at Rs. 2823 crores as against Rs. 2697 crores in the Budget for 1979-80. The Planning Commission has in consultation with the representatives of State Governments and Union Territories settled the outlays for their Annual Plans for 1980-81. A reasonable step-up in the outlays has been provided so that the tempo of development may be maintained.

Provision for food subsidy in 1980-81 is Rs. 600 crores. i. e. at the same level as in the Revised estimate for the current year. Pending a clearer picture of the volume of imports needed to supplement domestic production, subsidy on imported and indigenous fertilizers next year is placed at Rs. 600 crores. Defence expenditure is estimated at Rs- 3300 crores at this stage against Rs. 3273 crores in the current year. Provisions for other non-Plan expenditure have been made made keeping in view the need for utmost economy.

The Centre's share of tax revenues at existing rates of taxation is estimatd at Re. 8725 crores next year as against Rs. 8219 crores in in the Revised estimate for the current year. Receipts from market borrowings are estimated at Rs. 2500 crores against Rs. 1961 crores in the current year. Small savings collections are estimated to fetch Rs. 1000 crores as against Rs. 925 crores in the current year. External assistance, net of repayments, is estimated at Rs. 1196 crores as against Rs. 918 crores in the Revised estimate of the current year.

The total receipts of the Central Government in 1980-81 are estimated at Rs. 18980 crores. The total expenditure in the next year will be Rs' 20215 crores. Overall budgetary gap at the existing rates of taxation will thus be Rs. 1235 crores.

It is proposed to exempt from income-tax the income of all statutory corporations or bodies, associations or institutions wholly financed by the Central or a State Government, established for promoting the interests of the members of the Scheduled Castes and the Scheduled Tribes. Residents of Ladakh were exempted from payment of income-tax up to and including the assessment year 1979-80 in respect of income accruing or arising to them from any source in that distrist or outside India. This tax exemption will continue for a further period of three years. Under an existing provision, awards for literary, scientific and artistic work or attainment, instituted by the Central Government or by any State Government or approved by the Central Government, are exempt from income-tax. It is proposed to extend this tax concession to approved awards for outstanding work in alleviation of the distress of the poor, the weak and the ailing. There is no change in the rates of customs and Central excise duties. However, provision has been made in the Finance Bill for the continuace of the auxiliary duties of customs and special duties of excise at the existing rates for the year 1980-81.

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- Key Determinants of Disparity in Farm Income
- Black Money

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ECONOMIC AFFAIRS

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Black Money

The Special Bearer Bonds (Immunities and Exemptions) Ordinance of the President schemes to mop up black money, i.e. money acquired by black markeeting, smuggling, tax evading etc, for productive purposes by allowing the black money holders to invest in 10-year special bonds of Rs 10,000 each carrying premium at .2% per annum. The investors have been assured that they shall not be questioned about the source of their black income and that they will be eligible to hold any number of the bonds. The premium payable on the redemption of the bonds will be free from income tax and the value of bonds will be exempted from wealth tax and the transfer of the bonds or their resale will not come under the capital gains tax or gift tax. The bonds can also be subscribed abroad in foreign exchange which on maturity will however be paid in Indian currency.

Black money is the product of the economics of scarcity in a free economy which is marked by careless controls and patronised by politicians. It conflicts with 'white money' as it sucks it out largely through speculative trade channels for generating quick income. This leads to more money supply, price rise and social unrest.

The cancerous growth of black money cannot be answered by 'special bonds'. For few will buy them as one will not be willing to stake one's economic and social positions by being marked as the holders of special bonds. Besides, black money is more yielding, and, still further, it is the stem and stern in the hand of black marketeers to keep the political parties in tune. Above all, black money is now a gracious possession of social elites, a general way of life of the people and a legitimacy created by the Government itself by being a sharer of this social spoil.

In depth, black money relates to a system. In Indian case to the system which is characterised by a sense of democracy in illiteracy and of plenty in poverty. The system is so well rooted in Indian soil that black market has become the prime and the socalled white market the secondary market. It has an international link, and, precisely, it is the world's second economy. If the Government swoops on it, it has the strength to react violently that will shake the very foundation of the present socio-economic relations. Who will stake it ? For then he may himself be swept away by that reaction. A reaction amounting to social revolution is possible only by revolutionary force for definite revolutionary ends. Such force and ends are nowhere in sight in India. What is and is becoming are 'compromises' that may however one day create a revolutionary situation on its own merit. Human consciousness does not pay there, what will be rewarded is time element and therefore all is likely to result in clumsiness. In between, a negative thinking may be introduced That is, let the black market grow and let the feelings of the people against it also grow faster. That is, hasten up the anger of the people against the black market to shorten its course of evolutionary end. If the people can be educated against the social and economic crimes of black market, there passions can be roused against it and the black markeeters can be identified and socially isolated then some social and personal consciousness out of goodness of self or fear of social wrath may arise in the minds of the runners of black markets that may eventually weaken their strings. The rest is a matter of moments. If they do not respond to social anger then, whether it is liked or not, a social revolution will be unavoidable and they will be the first to pay for their social sins.

It is not much for the Government as that for the black markeeters and the other social offenders to thrash out their destiny to live with the main social stream. That is, whether they are amenable to Mahatma Gandhi's 'trusteeship' or the Communists' 'expropriation' or Subhas Chandra Bose's 'social consensus'.

Can Import Substitution Bridge the Trade Gap?

Virendra Agarwala*

Import substitution is essentially the process by which an item is produced which is either identical with, or is a close substitute for, an imported product. Import substitution may be said to take place also when there is an expansion in the production of goods and services in short supply, and items which would otherwise have to be imported are being produced indigenously. The pace of import substitution depends on the growing maturity of the industrial sector, and the ability to produce a wider variety of technologically sophisticated goods. Industrial growth is thus the key factor for increasing the range of quantum of import substitution. The declining share of imports in the total supply may be taken as a measure of the actual import substitution achieved. What to import, how much, for how long and how often are problems of a continuing nature that each country has to evaluate and resolve. In most developing countries, the absorative capacity for imports is greater than the capacity for generating exports. These countries are thus usually faced with adverse balance of trade. It is the concern with the adverse balance of trade, and the desire to achieve some measures of self-reliance which reinforced the need for accelerating the pace of import substitution.

The role and scope for import substitution has to be seen within the framework of appropriate industrial growth and trade policies, which can ensure maximum return to the economy from use of limited investment resources. Optimal import substitution means that the expansion of domestic production to replace imports takes place in a manner which is cost effective and is conducive for the development of an efficient and competitive industrial set up. This requires a comprehensive package of measures designed to direct investment into areas which leads to increased production and import substitution. The critical factors in determining the pattern of investments are efficiency and cost. The real need of the economy today is to increase production and remove shortages. Some of the major factors which have hampered growth have been poor utilisation of domestic capacity, under-utilization of resources, unsatisfactory delivery schedules, ·long gestation periods, poor quality and high prices. The strategies for the future have to ensure that such impediments do not allow the pace of import substitution and industrial progress.

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* Delhi.

Import substitution and export promotion are so closely linked in several industrial sectors that an integrated policy approach becomes inescapable. Sustained industrial growth is an essential prerequisite for effective substitution of imports and for rapid expansion of exports. Indigenous industry should be able to capture, maintain and build up adequate exports markets in selected areas. Policies need to be evolved which enable utilization of imports and fostering faster industrial growth, promoting import substitution development of indigenous technology and self-reliance, leading in turn to increased exports. Instead of cement, what we urgently need today is to allow import of cement machinery and help augmnet capacities in the shortest possible time. Assuming the foreign exchange component for a million tonne cement plant at Rs. 15 crores at the current cif price of imported cement of Rs. 600 per tonne, it would earn the required foreign exchange in just four months of production. Neglect of the cement industry in the past has been the sole reason for the present shortages of cement. To be viable at the present stage of our economic and social development, imports must be strictly related to a design for increasing domestic production and improving export capability.

The shortage of power and the stoppage of flow of oil from Assam have been reflected in a spurt in the quantum of imports and the outlay has risen sharply as there has been an increase in price. While the Iran-Iraq conflict too has necessitated large purchase of crude and petroleum product in the spot market and the non-availability of Assam crude during the critical period has led to heavy expenditure in foreign exchange, the oil bill is now estimated to be as high as Rs. 5,500 crore against Rs. 3,215 crore in 1979-80. If there can be a stepping up of production from Bombay High and other regions, the quantity imported may be reduced by about one million tonne though it is difficult to visualise as this stage, whether imports can be suitably regulated in anticipation of a pick-up in indigenous production. A special 10 year plan needs to be so formulated and implemented vigorously for intensifing oil prospect, exploration and production, using the most appropriate technology and for simultaneously increasing the refining capacity. A special task force must be set up urgently for assessing the immediate and future requirements of equipment for oil exploration and production, and for initiating necessary steps, in association with appropriate engineering and machinery manufacturing units in India, for indigenous development and production of the important items, especially off-shore equipment under a time-bound programme. The Government also needs to initiate urgent action to subject the nine capital intensive industrial areas namely, Iron and Steel, Fertilisers, Chemicals, Textiles man-made, Drugs and Pharmaceuticals, Cement, Paper, Aluminium and Electrical machinery and Power generating equipment: to detailed optimal investment planning studies leading to the preparation of short-term and long-term perspective plans through group and official experts or specialised outside agencies and including representatives of financial institutions.

The outlay on fertilizers and edible oils is likely to be higher by Rs 259 crore. The short-fall in production of fertilizer is due to the inadequate supplies of naphthia to the producers in Rajasthan, Uttar Pradesh and Bihar. Though there has been an increase in installed capacity, it is expected that the output of nitrogenous fertilizers will be only marginally higher than in 1979-80. Even with the upward adjustments in prices, there has been no decline in demand for different types of nutrients as weather conditions have been favourable in many parts of the country and farmers have been using linerally inputs in the expectation that higher prices would be realised for their produce. The additional demand for fertilizers has, therefore, to be met with larger imports It will be possible to raise fertilizer production substantially only in 1981-82 with the removal of existing constraints. The prospects of an improvement in the yield of edible oil-seeds in the current season is not considered now so encouraging as in earlier weeks. When it was expected that there 'would be a satisfactory output of oil-seeds, a sizable drop in rates was recorded from the peak levels. It is also necessary to adopt other supplementary measures for intensifying production of non-traditional oils and business income, property, general sales, excise, and foreign trade taxes. Both the size and growth of these tax bases are treated, and tax rates are applied to them to determine the potential yields that might be obtained with tax rates achieved on similar bases in comparable countries. The procedure results in an estimate of the extent of unused tax potential, which can be exploited to finance a shift toward prodevelopmental public expenditures.

However, in trying to raise the necessary funds to finance development, care has to be taken that it does not result in inflation or further aggravate the existing inflation. We can look at the possibilities of raising development finance by non-inflationary means.[3] The cash value of the total output of a country (Y) consists of consumer goods and services made and bought at home (C), investment goods made and bought at home (I) and exports (X). Thus, we have

$$Y \equiv C+I+X \qquad (1)$$

The value of output, (Y), is paid out as wages and distributed profits to all the producers, or left as undistributed profits with companies or nationalised industries. All of this money, (Y), has to be spent on home-produced goods and services (C) or on imports (M), or else saved by government (Sg) as a surplus of tax over government current spending, or by private persons or firms (Sp) as a surplus of income over spending and income tax. Symbolically, this can be represented as follows :

$$Y \equiv C+(Sg+Sp)+M \qquad (2)$$

By combining equations (*1*) and (*2*) we obtain equation (3).

$$I \equiv (Sg+Sp)+(M-X) \qquad (3)$$

Equation (3) says that the value of a country's investment is equal to the sum of two types of financial resources. These are domestic savings (governmental and private), and foreign savings. Further, any increase in any one of the components of investment finance will increase total investment only to the extent that it does not decrease other components. For example, if the government increases public saving (Sg) by a bigger profits tax, there is bound to be some fall in private saving (Sp) since firms and receivers of profits distributed as dividends must use more of there revenue to pay tax, and thus have less left to save. They are likely to meet some of the tax by cutting spending, so that the fall in Sp is not likely to be as big as the rise in Sg, and total investment should go up ; even if it does not, the rise in Sg may improve the composition of investment, which can increase total investment later.

The crystal clear point made from the foregoing discussion is that planners must be able to estimate the effects of fiscal decisions on the sources of total investment finance, not just on the public budget. Though the budget plays an important part in translating the expenditure and finance decisions on an annual basis, fiscal policy embraces all government transactions which have as their objective the support of general economic policy. In a developed country, fiscal policy very largely operates on the expenditure side of the account. In a less developed country the main emphasis of general policy is on growth with sufficient stability to prevent recurrent crises which would cause development to slow up or even retrogress, and hence give rise to losses on investments already made

Developing countries tend to differ, from one country to another, in their development finance structures. The reason for the dissimilarity lies in the fact that there are alternative techniqnes for mobilising the economic surplus—for eliciting savings and allocating them to investment. In its full detail, the list of alternative processes for putting saving to the service of selected investment is very long. However, the list may be compressed into two major classes. These are (1) processes of internal finance, and (2) processes of external finance. In the former, the government draws on domestic savings. In the latter, the government draws on the savings of foreigners. This paper looks at the former—the role of domestic savings in the financing of economic development.

Domestic Savings as a Source of Development Finance

The formation of capital, savings, is one of the important prerequisites to economic development. The mobilisation of savings has in recent years become a frequent recommendation for development policies. A macro-economic approach is often used indicating the amount of investment needed to increase the national output annually at a certain rate. If the proposed amount needed for investment is based on a calculated rate of gross domestic savings, this will not be enough to determine the amount of funds necessary for public and private investments unless the sources of these funds are identified. An overall estimate of resources expected to be available for investment must be supplemented by an indication of the sources of saving. Only then can one project the use of gross capital formations for investment in various areas.

Domestic Savings can be divided into (1) public sector savings (government saving plus retained profits of public enterprises) and (2) private sector savings. Public sector savings have assumed growing importance as a possible source of development finance in the developing countries. During the past decade public investment has been stepped up nearly everywhere and the expectation that public sector savings will help in financing public investment is evidenced in most of the development plans. In these plans, estimates of financial requirements are divided into domestic sources and inflow of foreign funds. In a number of countries, public sector savings have been assigned a sizeable proportion of domestic resources. Thus the problem of public sector savings is closely related not only to taxable capacity of the country but also to the trend of current public sector expenditure.

The importance of a continuous and expanding flow of private savings for financing both private and public investments is recognised throughout the less developed countries, and the need to take measures aimed at increasing the rate of private saving is stressed. Thus, the importance of raising the rate of private savings for financing development is obvious, but the question is through what policies and mechanisms can this be achieved.[a] This situation will vary from country to country and the financial organisation will have to be adapted to local conditions.[a]

In essence, we are saying that there is little meaning in discussing "mobilisation of savings" without specifying not only all the policy targets to be fulfilled, but also the policy means to be used. Equalisation of income and equity considerations may be just as important in practical development policy as investments. We can only say, in general, that depending on the policy programme and the means to be used, it may be necessary to influence savings with respect to size as well as composition. With respect to development programmes the task will invariably be to increase the size of domestic savings and accordingly to stimulate the propensity to save, but nothing can be said, in general, concerning the composition of savings. In any case, however, we are interested in the possibilities of affecting both the size and the composition of savings.

Increases in gross domestic savings, or more so public sector savings, given the deteriorating private sector in LDC's, necessarily imply increases in revenues or decreases in public expenditure. In the light of the current development thrust of the LDC's which is concomitant with increased public expenditure, then the feasible and only alternative is that of increased revenues. Bearing in mind the structure of total revenue in LDC's then the conclusion emerges that increases in the savings of the public sector would have to be brought about through increased tax revenues. With respect to the private sector, there should be further encouragement of savings from households. This can be done through two mechanisms.

First, assurance should be given by governments against loss of saving from inflation. Or better still, a significant effort should be made by governments to curb inflation. A most important deterrent to household savings is inflation.[4] Most households, particularly savers of small amounts, have no satisfactory means of protecting their savings from depreciation due to inflation. When prices have risen steadily the will to accumulate savings in the form of deposits, government bonds, or life insurance is undermined or eventually destroyed. In Israel, for example, the introduction of special schemes linking the value of savings to the cost of living or the dollar exchange rate attracted a large amount of savings funds, much of a new.

The second mechanism relates to use of the interest rate. The savings rates of interest should be raised. A higher rate of interest will induce the public to further increase its savings and to hold more of its savings in the form of deposits and bonds, rather than in hoards of foreign exchange which is already very scarce in LDC's. Furthermore, higher rates of interest will tend to encourage much more economical use of capital and thus diminish the deficiency of resources for development. This argument can be further supported through other studies which have shown that the major part of households' savings are in the form of claims on financial institutions.[5] Households clearly prefer to hold their savings in the form of claims on financial institutions rather than in the form of direct claims on the government and corporate sectors. Hence, any further incentives provided by these financial institutions, in the form of higher interest rates, will tend to increase the volume of household savings.

However, it must be pointed out again that in any increase in gross domestic savings, the majority of that increase would have to come from the public sector for reasons already stated, But the savings of Central Governments (excess of revenue over current expenditure) in LDC's have been extremely volatile.

The savings of Central Governments have an important role to play in the accumulation of both total public sector savings and gross domestic savings. This is so because of the increasing scarcity of funds from the international financial institutions. This increased savings performance will require careful budgetary management by Central Governments as well as a reduction in the dependence of public corporations on Central Governments for both current and capital transfers. The reduction of the dependence of the public corporations on the Central Governments would require that measures be taken to improve the net earnings of public enterprises. This would, among other things, require that these enterprises be managed efficiently and be allowed to charge prices that would enable them to earn profits which could then be invested, in accordance with government policies as stipulated in the development plans.

Data on savings are among the least reliable in all developing countries.[6] However, given the general consensus that Central Government current revenue may decrease due to the decline in export earnings in LDC's coupled with the expanding role of state activity, it can be expected that in the next few years government savings will fall to the levels of previous years unless greater use is made of budgetary management and the tax structure or, better still, effective fiscal policy.

Fiscal policy is now widely recognised to be a potent instrument for achieving important economic and social objectives in developing countries. One of the primary objectives of fiscal policy in those countries is to raise the ratio of savings to national income so that the rate of net investment could be stepped up[7] without the danger of inflation.

As the rate of private savings continues to decline and the role of the public sector expands, public savings undoubtedly assumes further importance and it becomes necessary to reorient fiscal policy to generate sizeable surpluses in the public sector.

In as much as the main sources of public sector savings are taxes and surpluses of public enterprises, it may be taken to represent collective compulsory savings[8] by the community, as distinguished from voluntary savings by households and private corporations. Public savings have a dual role to play. On the one hand, it constitutes a convenient source of finance for public investment, on the other, it may serve to raise the rate of savings in the economy.

Conclusion

The financing of the development effort in LDC's, for reasons stated before, has displayed a tendency toward increased use of internal sources of funds either through the use of surpluses or borrowings from the banking system. That is, through the use of domestic savings.

In terms of overall gross domestic investment during 1960-75, gross domestic savings consistently financed more than one-third of the expenditure of LDC's.[9] Savings, therefore, represent an integral part of development finance in the economy of LDC's. The ratio of savings to GDP averaged 20 percent during 1970-75,[10] indicating the capacity of these economies to save. Efforts should therefore be made to maximise the volume of savings generated, given the capacity to do so and the existence of the necessary institutions to promote an increase in gross domestic savings.

However, it appears that government savings have borne no close determinable relationship to government revenue in the past. Saving has occurred, whenever it has occurred, more as a residue than as a result of conscious development planning by LDC's to achieve a given rate of saving. Sudden and unforeseen increases in current expenditure resulted in negative savings in some years, while buoyancy in revenues or increases in tax collections unaccompanied by immediate rise in expenditure, produced a high rate of saving in other years. Fluctuations in revenues, brought about primarily through changes in export earnings have also been responsible for wide variations in the rate of government savings.

Since government revenues are subject to many complex factors and the level of government expenditure has to be determined on the basis of a multitude of considerations it is perhaps inevitable that the rate of saving in the government sector should fluctuate from year to year. However, what is really important is that governments must be able to save a fairly substantial proportion of their revenue over a period of years and that they should consciously seek to raise this proportion in the succeeding periods.

Notes

1. See Michael Lipton, "Financing Economic Development" in Dudley Seers and Leonard Joy (eds.) *Development in a Divided World* (London : Penguin Books. 1971), pp. 231--69.

2. Jean van der Mensbrugghe, "Domestic Savings in Developing Countries", *Finance and Development* 9 (March 1972), pp. 36-39.

3. Ibid.

4. For more on this issue W. T. Newlyn, *The Financing of Economic Development* (New York : Oxford University Press, 1977), pp. 328-329.

5. See, for example, V. V. Bhatt, "Some Aspects of Financial Policies in Developing Countries", *Finance and Development* 11 (December 1974), p. 30.

6. United Nations, *Problems and Policies of Financing* (New York : United Nations, 1968), p. 162.

7. A. P. Thirlwall, *Financing Economic Development* (London : Macmillan Press, 1976), pp. 25-29.

8. This term is not meant to include the so-called "forced saving" brought about through inflation.

9. World Bank, *World Development Report 1978* (Washinton, D.C. : World Bank, August 1978), p. 6.

10. Ibid.

GLOBAL BALANCE OF PAYMENTS SUMMARY

(billion U. S. dollars)

Balance on

		Trade	Services and private transfers	Current account excluding official transfers	Capital account balance	Change in liabilities to foreign official agencies	Balance financed by changes in Reserve Assets
Industrial countries	1976	−13.0	12.5	− 0.5	−4.6	15.4	10.2
	1977	−17.6	13.5	− 4.1	3.3	38.7	38.0
	1978	8.7	24.8	33.4	−21.6	29.2	41.1
	1979	−36.1	26.3	−9.8	13.8	−12.2	−8.1
Oil exporting countries	1976	65.3	—25.3	40.0	—31.3	—	8.8
	1977	61.6	—29.7	31.9	—21.6	—	10.3
	1978	41.1	—36.1	5.0	—11.6	—	— 6.6
	1979	110.4	—42 0	68.4	—46.9	—	21.5
Non-oil developing countries	1976	—26.9	—6.0	- 32.9	41.4	4.3	12.8
	1977	—22.3	—6.2	—28.6	40.1	0.4	11.9
	1978	—29.7	—6.1	—35.8	53.3	0.7	18.2
	1979	—42.6	—10.3	—52.9	63.9	0.2	11.0

Source : IMF

Key Determinants of Disparity in Farm Income

(A Comparative Analysis)

A. N. Sadhu and R. K. Mahajan*

The recent adoption of new agricultural strategy (NAS) in Indian economy has witnessed novel achievements in the field of agricultural production and productivity. The use of NAS, comprising of HYV seeds, use of chemical fertilizers, pesticides, mechanized implements, etc., has made Indian farming a profitable business. Now the farmers are not only feeding their own household members but also producing marketable surplus for the millions of people of our country. However, NAS could only be effectively used where the necessary resources, especially assured irrigation, are available. Depending upon the inputs, the nature of NAS and the time of its adoption, income inequalities have tended to increase. The impact of improved farm inputs is experienced differently by different regions and strata within the same region. Again the region and category of farmers which adopted NAS much earlier are invariably benefited more than the later adopters. The major objective of this paper is to analyse the extent to which farm income inequality is explained by different variables in the selected farms of Punjab and J. & K.

Methodology and data

Primary data utilized for this study pertains to Batala Block of Punjab and Marh Block of J. & K. Batala Block of Punjab are comparatively more progressive than the Marh Block of J. & K. in adopting the NAS. Two-stage sampling technique was used for the selection of villages and cultivator households. Seventyfive households from three villages from each of the two blocks were

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selected randomly. The total size of sample was 150 farmers. Th two blocks exhibited, more or less, similar agro-climatic conditions an cropping pattern. The reference period for this study was the agricultural year 1976-77.

The following 'Identity Model'[1] was used to examine the relativ contributions of each explanatory variable in inequalities of income.

The model is of the the following form :

$$I \equiv A,\ D,\ \frac{K}{A},\ \frac{N}{K},\ F,\ H\ \left(\frac{I}{D.F.H.N.}\right) \ \ldots\ldots \ (\text{Identity})$$

$$= A,\ D,\ C,\ S,\ F,\ U,$$

Where

I=Farm business income.

A=Farm size.

D=Yield increasing divisible technology/acre.

$S=\frac{\text{Area under } HYV}{\text{Cropped Area}}=\frac{N}{K}$=Ratio of area under HYV t cropped area.

$C=\frac{\text{Cropped Area}}{\text{Farm Size}}=\frac{\text{K}}{\text{A}}$=Cropping Intensity

F=Family lab. days/per acre.

H=Hired lab. days/per acre.

Since it may not be possible to include all the factors whic account for increase or decrease in income inequality, the adjustmen factor 'U' ($=\frac{I}{D.F\,H.N}$) takes care of unaccounted factors.

Taking log of both sides, the model becomes :

$$\text{Log } I \equiv \text{Log } A + \text{Log } D + \text{Log} C + \text{Log } S + \text{Log } F + \text{Log } H + \text{Log } U$$

From the Model it follows :

$$V\ (\text{Log } I) \equiv \text{Cov } (\text{Log } I,\ \text{Log } A) + \text{Cov } (\text{Log } I,\ \text{Log } D) \ldots\ldots$$

This shows that the factors considered explain logarithmic varianc of income by their covariance with it.

ANALYSIS

Farm Size

Farm business income is mainly a function of farm size and productivity. The farm produce varies from one category of farm t another. Moreover, larger the size of the farm with higher level o technology, greater will be the produce. It is because large farm have a better access to resources both owned and hired and their risk bearing capacity is greater than small farms. A number of studies[1] made in the context of *NAS* have found that large farmers gained much more than the small and marginal farmers.

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[1] Singh, Joginder and A. S. Kahlon, "Some Determinants of Disparity Farm Income in the Punjab". Asian Economic Review, VII 1, 2, 3, 1971.

The contribution of farm size to farm income inequality is shown in Table-I. The contribution of farm size to inequality in farm income is 81·29 per cent on the Batala farms and as much as 101·39 per cent on Marh farms. It implies that farm size is one of the most important factors responsible for causing disparity in farm income of small and large farms. It points to the fact that small farmers have low level of income whereas higher income farmers are mostly large farmers. It can be seen from Table-II that the lower half and upper half income farmers have an average size of 4·24 acres and 9·97 acres respectively in case of Marh block. In Batala Block the lower and upper half income farmers have farm size of 4·40 acres and of 11·92 acres respectively. It can also be observed that the degree of inequality caused by farm size is greater in Marh Block than that of Batala Block. It shows that the extent of farm income inequalities can be reduced by redistribution of land in favour of small and medium farmers in Marh Block.

Cropping Intensity

The variation in the cropping intensity would also cause disparity in farm income. In our analysis the coefficient of cropping intensity is represented by negative sign in both the regions. It shows that the cropping intensity helps in reducing the farm income inequality between the farm increase of small and large farms. The extent of reduction in income inequality between low and high income farmers is only 0·09 per cent among Batala farms and 2·029 per cent in the Marh farms. It is evident that the intensity of land use, i e., cropping intensity, has direct bearing on farm income. Higher the intensity of croping, higher will be the income and vice-versa. NAS is believed to be associated with an increase in cropping intensity. In this analysis, cropping intensity is negatively related to farm

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1. (a) Rao, C. H. H. "Farm Size and Credit Policy", Eco. & Pol. Weekly, Dec. 26, 1970.

(b) Mishra, G. P. "The Green Revolution Changes and Challenges", Eastern Economist, September 29, 1977.

(c) Choudhury, B. K., "Disparity in Income in the Context of HYV", Eco. & Pol. Weekly, Sep. 27, 1970.

(d) Rudra, "Big Farmers Pb.", Eco. & Pol. Weekly, Dec. 27, 1969.

size. Table-II shows that lower half income group farmers of Batala Block have cropping intensity 186 and upper half 184, whereas in case of Marh Block the figures for same income groups are 198 and 193 respectively.

Table—I

Coefficient of variance of income and covariances of income and different factors in farm economies of Marh (J & K) and Batala (Pb.) Blocks

Region	I	A	D	C	S	H	F	U
Batala	·1133	·0921	—·0001	+·0003	—·0015	·0261	—·0733	·0695
	(100·0)	(81·29)	(-0·09)	(·26)	(—1·32)	(23·04)	(—64·70)	(61·52)
Marh	·0719	·0729	—·0015	—·0001	·0011	·0233	—·0225	—·0013
	(100·0)	(101·39)	(—2·09)	(—0·14)	(1·53)	(32·41)	(—31·29)	(—1·81)

*Figures in bracket are percentage contributions of different factors to farm income inequality.

Table—II

Per farm average farm income and average of explanatory variable for different income groups of farms in Marh and Batala Blocks

Income Group	FBI/ Farm (Rs.)	Farm Size (A) (acres)	Cropping Intensity (C) (%age)	Area in HYV(S) (%age)	Family labour /acre (man-days)	Hired labour /acre (man-days)	Divisible techno-logy per acre (Rs.)
			BATALA				
Lower half	5640	4·40	186	97	21·73	14 00	342
Upper half	19517	11·92	184	98	14 25	14·90	313
Overall	12578.5	8·16	185	97·5	17·99	14·45	327·5
			MARH				
Lower half	5418	4·24	198	89·90	22·01	11·54	200
Upper half	14340	9·97	193	90·89	16·00	14·00	205
Overall	9879	7·11	195·5	89·5	19·01	12·77	202·5

Percentage Area under HYV

The HYV seeds are a major ingredient of NAS which has increased the agricultural production tremendously. These are usually called the revolutionary seeds. In our sample the land under HYV seeds is paddy, wheat and sugarcane. Analysis shows that per cent area under HYV seeds contributes positively in Batala Block and negatively in Marh Block towards farm income inequality. It shows increase in farm income inequalities to the extent of 0·26 per cent on

Batala farms and decrease in inequalities by 0·14 per cent in case of Marh farms. It is found that on small farms the area under HYV formed a lower proportion of the total cropped area as compared to large farms in Batala Block. It may be due to the factors, viz., better accessibility to credit, enough investible funds, etc., to large farmers.

Yield Increasing Divisible Technology

Since the adoption of yield increasing divisible technology, the small and medium farms have become visible and can spare funds for using more modern yield increasing inputs per area on the farms. Moreover, biological-chemical technology is considered to be size neutral and possesses the merit of divisibility. The contribution of divisible technology in income inequality is negative in Batala Block and positive in Marh Block. It negatively contributes in farm income inequality by 1.32 per cent and positively to the extent of 1·53 per cent on the Batala and Marh farms respectively. It implies a very pleasing conclusion that the use of NAS on all size of farmers will certainly help in reducing the farm income inequalities between the poor and rich farmers.' Secondly, in Batala Block the small farmers are prosperous enough to afford increasing use of yield-increasing divisible technology, (biological-chemical). The Marh farmers have not achieved that level where the small and some medium farmers can freely use this technology to patch up the gap in farm income with large farmers. This analysis brings out that there is a gap in using NAS by small and large farmers in Marh Block. Small farmers are incurring low expenditure per acre on yield-increasing technology as compared to large farmers as it can be seen from Table-II.

The results of Table II show that the per acre use of divisible technology on low income farmers of Batala Block is higher than that of high income farmers, whereas the reverse is true in the case of Marh, low and high income farmers. It can be suggested here that small farmers should be provided with sufficient funds so that they may be able to use yield increasing technology in optimum doses to increase their income. It will certainly help in narrowing the gap between poor and rich farm income groups.

Hird Labour

The hired labour input contributes positively to the farm income inequality in both the blocks. It explains for 23 04 per cent of income inequality in Batala Block and 32.41 per cent in the case of Marh

Block. The positive contribution is due to the fact that small farms use more of the family labor and less of the hired labor but reverse is true in the case of large farms. It is because the increased demand of labor in relation to farm size is fulfilled by employing hired labour on large farms. From Table-II it is clear that the lower half income group applies 11·54 man-days per acre and upper half 14·00 man-days per acre on the Marh farms, whereas on Batala farms the corresponding employments of hired labor for lower and upper half income groups are 14 man-days and 14.90 man-days repectively.

Family labour

The overall labor employment is classified into two categories, family and hired labor. The main objective of this classification was to know the net impact of behaviour of these types of labor on farm income inequality. It is because the proposition of family as well as hired labour differs from one category of farm size to another. The analysis of Table-I shows that family labor is one of the most important factor which tends to reduce the income inequality in both the regions. The family labor utilization is usually high in lower income groups compared to higher income groups. Table-II shows that the family labor per acre on lower and upper income groups is 21·73 man-days and 14.25 man-days on Batala farmers, whereas the corresponding family labor employment per acre figures for Marh farmers are 22·01 and 16 man-days respectively. The family labor reduces farm inequalities to the extent of 64·70 per cent on the Batala farms and 31·29 per cent in the case of the Marh farms.

Residual

The factors which have been discussed above, prove to be important determinants of inequality in the farm income. There may be several other factors contributing negatively or positively towards the FBI which are not included in this analysis. The net effect of those factors is taken under the heading- residual. The net contribution of unexplained factors is worked out to be positive towards farm income inequality in Batala Block by 61·53 per cent which in case of Marh block it is to reduce the income inequality by 1.82 per cent. The higher residual figure in case of Batala Block shows that some important factors are not taken in this study which explain the income inequality. Factors like indivisible technology, credit, market imperfection etc., may be contributing significantly to income inequalities.

Concluding Observations

Summing up the above discussion, it can be said that farm income inequality is largely influenced by the farm size. From the blocks it is clear that this is largely responsible for causing income inequalities. The other factors which contribute positively to farm income inequality in Batala Block are the per cent area under HYV and hired labor per acre, while in Marh block yield-increasing technology/acre and hired labor/acre are the factors responsible for contributing towards income inequality. The cropping intensity and family labour/acre contribute towards reduction in the disparity in farm income in both the blocks. In addition to these, yield increasing technology per area in Batala Block and per cent area under HYV in Marh Block are contributing towards reduction in the farm inequality. It is interesting to note that in these states different factors are responsible for increase or decrease in the income inequality. This study highlights the relative importance of different factors which polarize the income distribution. The factors which are mainly responsible for disparity in income should be checked to ensure the farm population an egalitarian income. It can be suggested here that land should be redistributed among the factors in such a manner that the present concentration of income towards the upper half of the population should be lowered. The lower half income group farmers should also be provided with sufficient capital so that they may keep pace with upper half income group for introduction of all components of NAS in the optimum level.

It also appears that rapid technological changes have the impact of widening the income disparity in the farm economy of Batala Block (as the variation of logs of income is 0·1133 in Batala Block and 0·0719 in Marh Block) more than that of Marh even though the distribution of the factors like area under HYV seeds, yield-increasing divisible technology, hired labor, cropping intensity, etc., are less unequal than in the Marh Block.

Resource Productivities on Sample Tribal Farms in Bastar District of Madhya Pradesh

Hanumant Yadav*

With the introduction of high yielding varieties of seeds and the increase in the availability of chemical fertilizers, Indian agriculture is no longer traditional as defined by T. W. Schultz.[1] This does not imply that farming in all the regions of India has been modernised. The scope for adoption of new technology is heavily restricted in tribal areas, because the agro-economic conditions weigh heavily against the adoption of new agricultural technology. Thus by and large the tribal agriculture in India is in a backward state.[2]

As per census 1971, the scheduled tribes constitute nealy 7 per cent of total population of India. Of all the states in India, Madhya Pradesh has the largest tribal population and of all the districts in Madhya Pradesh Bastar district has the highest tribal inhabitants.[3] Nearly 70 per cent of population of the district is tribal.

Agriculture is the principal means of livelihood of tribals of Bastar district. The agro economic studies on Bastar district[4] have revealed that tribal farmers of this district are cultivating the same type of land and using the same technique of production since long. There

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* Rabisankar University, Raipur.

[1] Schultz T. W.—"Modernising Traditional Agriculture." —New Haven Yale University Press, pp. 30-48.

[2] Rapporteur's Reports—Conference Nos. 1970 & 1978—Development of Agriculture in Tribal Areas & Farming Systems in Hill Areas—Indian Journal of Agricultural Economics.

[3] In all 22 per cent of the tribal population of the country live in Madhya Pradesh and 12% population of M.P. live in Bastar district,

[4] Mishra C. S.—"Problems of Agricultural Development in Chhatishgarh Region of M.P.—Research Project Report. pp. 76-77. R S. University, Raipur, 1977.

Ramchandran T. S —"Agricultural Development in Tribal Areas of Madhya Pradesh—A Case Study of Bastar District. Ph. D. Thesis-1976, R. S. University, Raipur.

is no significant change in the cropping pattern of the district in the last 30 years. Thus the tribal farmers of the district have been termed as traditional. However, not a single published study has thrown light on the resource productivity and allocative efficiency of tribal farmers of this district. It is against this background a maiden attempt has been made to examine the resource productivity and allocative behaviour of tribal farmers in crop production in Bastar district of Madhya Pradesh. An attempt has also been made to identify the major production constraint on the tribal farms.

The framework of the hypotheses within which the present study has been conceived is the following :

(1) Returns to scale are constant,

(2) The marginal productivity of labour is zero,

(3) There is comparatively few significant inefficiencies in the allocation of resources hence there is no scope for increasing the farm income simply by reallocation of existing resources, and

(4) There exists possibility for increasing farm income by enhancing the supply of material inputs.

The study is based on farm level data pertaining to crop enterprise of 100 farms spread in 10 villages of the district. Three stage sampling design has been adopted to select the sampling unit 'farm.' The data have been collected in structured schedules.[5] The reference year of the study is 1978-79. It was a fairly normal agricultural year for the district.

Agro-Economic Profile of the District

Bastar district with an area of 39,171 sq km is largest in size and most backward district of Madhya Pradesh. 22 per cent of total geographical area is under cultivation, remaining area is either under (60%) or not available for cultivation. Irrigation facilities are negligible but the rain is plentiful (1500 mm) in a normal year, The intensity of cropping is 105·0% and kharif crops are predominant. Paddy is deployed to its cultivation. Two small millets (Kodo & Kutki) combinedly occupy nearly 21 per cent of the cropped area. 10 per cent of sown area of the district is devoted to the production of non-food crops. The average size of holdings is of 5.903 hectares.

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[5] The data utilized in the present paper had been collected by the author for his Ph. D. dissertation on 'Resource Allocation and Farm Efficiency in Tribal Economy of Bastar District.' —Ph. D. Thesis, 1980, Ravishankar University, Raipur.

Specification of Model and Measurement of Variables

Cobb-Douglas type production function[6] has been fitted to work out the elasticities of production of imputs which in turn have been used to calculate their marginal value products (at their geometric means) for the average farms. The resource use efficiency of the farm has been judged on neo-classical criterion that each factor of production is paid equal to its marginal productivity. The single equation Cobb-Douglas type function has been estimated by the ordinary least squares method. The specification of the function is as follows :

$$Y = a x_1^{b_1} x_2^{b_2} x_3^{b_3} x_4^{b_4} x_5^{b_5}$$

where

Y = Value of output (Rupees)
x_1 = Land (standardised hectares)
x_2 = Human Labour (man-days)
x_3 = Bullock Team (days)
x_4 = Material (Rs.)
x_5 = Fixed Capital (Rs.)
a = Constant (Intercept term), and
b_1 to b_5 = Elasticity coefficients of respective imputs.

Definition and Measurement of Variables

Output (Y)

The output is defined as the sum of gross value of output (main product + by-product) of all crops evaluated at farm harvest prices irrespective of being consumed, sold or maintained in the stock.

Land (x_1)

Land input has been measured in terms of hectares adjusted for the differences in the fertility. It has been adjusted on the basis of land revenue.

Human Labour (x_2)

Human labour has been measured in terms of man-days of eight hours. The difference in the efficiency of labour has been taken into account converting child labour in man-days. However, female

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6. Despite knowing certain limitations of Cobb-Douglas production function approach, we applied it because of its relative advantages, namely theoretical fitness to agriculture and computational manageability. Further, most of the production function studies have used this approach to study the allocative efficiency of traditional farms in India. Hence to facilitate the comparison with other studies, we chose it for our present study.

labour has been treated on par with male labour.[7] In order to avoid multi-collinearity between human and bullock labour inputs, the number of days human labour worked with bullocks have not been included under this head. Family and exchange labour have been inputed on the basis of prevalent wage rates.[8]

Bullock Team (x_3)

Bullock team has been defined in terms of eight hours days worked by a pair of bullocks and a person (needed to operate the bullocks). The cost of owned bullocks team has been evaluted at the prevalent market ratea.

Material (x_4)

Seeds, manures, chemical fertilizers and pesticides[9] have been included under this head. Farm yard manures have been evaluated at their market price prevalent in the area.

Fixed Capital (x_5)

It includes depreciation and interest on farm implements and machinery in value terms. The method of evaluation and its allocation to the different crops are the same as has been adopted in the 'Studies in the Economics of Farm Management' sponsored by the Ministry of Agriculture, Government of India.

Factor Cost

The factor cost is the opportunity cost of inputs which they should earn if employed elsewhere. The rental value of land has been taken as factor price of land input. The average wage rates prevalent in the area for human labour and bullock team have been taken as acquisition costs of these inputs. The factor cost of material and fixed capital have been taken as one rupee, since these inputs have been measured in value terms.

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[7] In rural areas of Bastar female agricultural labourers are known as equally efficient as male, hence the wage rates for the same nature of job are also equal for both the sexes.

[8] Although the farm labour is abundant in Bastar district, but it becomes scarce during peak season of agricultural operations: namely sowing/transplanting and harvesting operations. Because all the tribal farmers commence agricultural operations just after performing community ceremonies. Hence, if the farmer or his family members do not work on their farms, they may get employment as agricultural labourers on other farms in no timo. Hence the family labour has been evaluated at prevalent market wage rates. The opportunity cost of labour has been at prevalent market rates.

[9] Out of 100 farmers, 93 farmers did not apply chemical fertilizers in their fields, although it was available to them on 75% subsidy. Remaining 7 farmers who purchased fertilizers did not apply the recommended doses, but used arbitrarily in meagre quantity. Not a single sample farmer purchased and/or applied insecticides and pesticides.

Characteristics of Sample Farms

The average size of sample holdings is of 5.616 hectares. Paddy, kodo-kutki and non-food crops occupy 60%, 20% and 10% respectively of gross cropped area. The cropping pattern of average sample farm is not significantly different from the cropping pattern of the district.

Per Hectare Value of Inputs and Output on Sample Tribal Farms

The total value of inputs on selected sample farms is Rs. 592·28 per hectare. Human labour is the most important input (Rs. 277·15 per hectare) as it accounts for 46·79 per cent value of total inputs. Family labour forms nearly half of the labour force of sample farms. When the value of bullock team (Rs. 75·33 per hectare) is added to the value of human labour, the combined labour constitutes nearly 60 per cent value of inputs. Material is the second important which forms one-fourth (23·93%) of total value of inputs. Seed constitutes nearly 70% of total value of material.

The total value of output of sample farms comes to Rs. 918.23 per hectare. Thus the net return per hectare has been arrived at Rs. 325·95. The simple input-output ratio on an average sample farm is 1·55. Thus the tabular analysis indicates that farming is a remunerative enterprise in Bastar district. However, the above analysis suffers from some major limitations. Firstly, it cannot measure the contribution of each factor in combination with other factors responsible for changes in the output level. Secondly, it fails to depict the scope of increasing farm income with reshuffling the existing resources. Therefore, to estimate the contribution of each input to output and examine the potentialities of raising farm income by recombining the resources, multivariable analysis of the production process has been attempted.

Resource Productivity on Sample Farms

The elasticities of production and related production function statistics have been presented in Table II. The adjusted coefficient of multiple determination ($\bar{R}^2$) is .9416. It suggests that 94.16 per cent variations in the value of crop output has been caused by the selected variable inputs. Returns to scale are obtained by adding up all the

* Arithmetic means have been used to calculate per hectare value of inputs.

elasticities of production of various factors included in the production function which indicates the behaviour of the change in total returns when all the inputs are changed simultaneously in the same proportion. The sum of elasticities is 1.0518. It is not significantly different from unity. Hence it supports our hypothesis of constant returns to scale in tribal agriculture of Bastar district.

Table I

Per Hectare Distribution of Value of Inputs on Selected Tribal Farms in Bastar District—1978-79

Inputs		Per hectare value* Rs.	Percent to total value of inputs
Human Labour :	Family	131.56	22.21
	Exchanged	33.20	5.60
	Hired	112.39	18.98
	Total :	277.15	46.79
Bullock Labour :	Owned/Farm	55.26	9.33
	Exchanged	16.66	2.81
	Hired	3 41	.58
	Total :	75.33	12.72
Materials :			
Seed :	Farm produced	92.36	15.59
	Purchased	5.43	.92
	Total :	97.79	16.51
Manure :	Farm Yard	21.04	3.55
	Purchased	14.26	2.41
	Total :	35.30	5.96
Chemical fertilizers		5.16	.87
Plant protection medicines		.56	.09
Irrigation		2.94	.50
	Total : Material :	141.75	23.93
Fixed Capital :			
Depreciation and Repairs of Farm Machinery and Implements		4.31	.73
Land Revenue		1.34	.23
Rent and Interest		92.40	15.60
Other Fixed Expenses		—	—
	Total : Fixed Capital	98.05	16.56
Total Value of Inputs : Per Hectare		592.28	100.00

* Arithmetic means have been used to calculate per hectare value of inputs. Total No. of farms=100.

Table II

Elasticity Coefficients, Standard Errors and Sample Geometric Means for the Average Tribal Farms in Bastar District 1978-79

Inputs		Coefficients	Standard Errors	Sample Geometric Means
Land	(x_1)	.1741*	.0481	4.843 hectares
Human Labour	(x_2)	.2211*	.0526	489.47 days
Bullock Labour	(x_3)	.1467*	.0451	124.80 days
Material	(x_4)	·3905*	.0462	605.22 (Rupees)
Fixed Capital	(x_5)	·1192*	.0395	425 67 „
Output	Y			4023.49 „
Constant (in log)	A	1.3010*	.0471	
Standard Error of Estimate			.0870	D.F.=104
Adjusted coefficient of multiple determination				$\bar{R}^2$=.9416

* Significantly different from zero at 1 per cent level using a one tail 't' test.

Table III

·Zero Order Correlation Matrix for Sample Tribal Farms in Bastar District

Variables		Output	Land	Human labour	Bullock labour	Material	Fixed capital
		Y	X_1	X_2	X_3	X_4	X_5
Output	(Y)	1.0000	.8280*	·8483*	.8082*	.9021*	.8887*
Land	(X_1)		1.0000	.5030	.6998	.7685	.7474
Human labour	(X_2)			1.0000	.5186	.3989	.6990
Bullock labour	(X_3)				1.0000	.6057	.7255
Material	(X_4)					1.0000	.7314
Fixed capital	(X_5)						1.0000

* Significant at 5% level.

All the elasticities have the positive sign and are statistically significant at 1 per cent level. The margitude of individual coefficients indicates the percentage change in output in response to a one percent change in the input concerned while leaving other factors of production constant. The magnitude of elasticity coefficient for material (X_4) is highest (.3905) among all the factor inputs. The regression coefficients for human labour is second in order of importance. The coefficient of human labour is +.2211, which is significantly different from zero at 1% level. Hence we reject the hypothesis 'that marginal productivity of labour is zero' on the average tribal farms. (Table IV).

Table IV

Marginal Value Products and Factor Cost-MVP Ratio on Selected Sample Tribal Farms in Bastar District

		Factor costs	Marginal Value products	Factor-cost MVP Ratio
Land	(X_1)	191.88	144.63 (39.96)	.75 NS
Human labour	(X_2)	2.30	1.82 (.43)	.79 NS
Bullock labour	(X_3)	5.50	4.73 (1.45)	.86 NS
Material	(X_4)	1.00	2.60 (.31)	2.60 NS
Fixed capital	(X_5)	1.00	1.13 (.37)	1.13 NS

() Numbers in parentheses show the standard error of MVPs.

* Significantly different from unity at 1% level.

NS : Not Significantly different from unity at 10% level.

The marginal value products of individual inputs have been calculated at their geomatric means. Most of the MVP factor price ratios excepting the one for material (X_4) are not significantly different from unity (Table IV) and hence it indicates that all the inputs except 'material' have been used efficiently on average tribal farms. The marginal value productivity of material is significantly greater than unity. It indicates that production on an average tribal farm can be increased by using more material (investing more in manure, fertilizers, seeds etc.). The foregoing analysis supports our hypothesis that there are only a few significant inefficiencies in the present use of resources on the average farm in Bastar district. It implies that there is a few possibility of increasing farm production simply by recombining the existing resources. Thus the results of our study depicts that the tribal agriculture of Bastar is traditional as conceived by Schultz.

On the basis of fertility and situation, the land of the district has been classified into three catagories : Bera or Munda (low land), Marhan (upland or high land) and Bari (kitchen garden land). Bera or Munda is a fertile land comprising Dorasa and Gabhar soils. The fertility of Marhan land is very poor. It comprises bharra, bhata and tikra soils. Bari land is generally attached to the permanent dwellings of tribal farmers. It gets all the refuge, cattle dung and wastage of households, so the land is automatically gets manured. Thus the land is considered more fertile. Our investigations revealed that the tribal farmers are rational in judgement of their own land. They have allocated good land for high value crops viz. paddy, vegetables, spices, etc. and inferior type of land to low value crops (kodo-kutki, kulthi, ragi, sawa, etc.). Tribal farmers deploy nearly one-fourth of their cultivated area to kodo-kuthi ragi crops, because these crops survive under conditions of impoverished soil base, precarious weather and recurrent moisture stress.[10] Even under adverse weather conditions these crops assure a minimum output.

Our analysis has revealed that under existing conditions, farm production and income can be increased significantly by enhancing the supply of 'material' (working capital). On an average the tribal farmer does not have surplus to invest in the agriculture due to subsistance level of farming. Thus 'working capital (material) is a vital constraint in the traditional farming of Bastar district. The strategic importance of working capital (material) will be more felt if the demand for modern inputs is created in tribal areas. Knowing this fact the Government has made special arrangements to supply inputs (material) and credit to the tribal farmers through the cooperatives under Tribal Development Projects.[11] Our investigations have revealed that tribal farmers hesitate to avail of the facilities offered to them.[12] The cooperatives which are at present the lone institutional lending agencies in the rural area are not working satisfactorily.[13] Farmers have given three reasons of not availing of the facilities. Firstly, they have bitter experiences of the cooperatives. Secondly, the HYV paddy seeds supplied to them did not germinate in the year 1977-78. Thirdly, a section of farmers does not want to use chemical fertilizers without the support of irrigation facilities.

Hence the first task of the Government should be to remove the distrust of farmers. The material (inputs) and credit should be made available to the farmers in time and also in adequate quantity. There is need to strengthen the extension services so that the tribal farmers could be motivated to avail of the benefits of development programmes.

10. Pant S. P.—Environmental constraints, crop-mix and adoption of new technology on tribal and non-tribal farms in Madhya Pradesh."—Agricultural Situation in India. Vol. XXXI, No. 5. Aug, 1976.

11. Chemical fertilizers and HYV seeds had been offered on 75% and 50% subsidy respectively, under Tribal Development Projects of Govt. of India.

12. Our investigations revealed that only 7 selected farmers availed of the facilities in the reference year. (7%)

13. Reserve Bank of India—Report of the Study Team on Agricultural Credit Institutions in Madhya Pradesh—Tribal Areas—Bastar District.—1977, page 101.

Self-Reliance

Michael Meacock

Stone-Age ways ruled on the South Pacific Island of Tanna whne Captain James Cook discoverd it in 1774. Traders' ships soon followed, disgorging trinkets and tools that seemed like providence from heaven. Thus originated the belief that one day a messiah of material riches will come, ushering in a prosperous, work-free millenium of unlimited "cargo"—pidgin English for material goods. Scores of such "cargo cults" have sprung up across the South Pacific Islands from Indonesia to Fiji.

In a far less exaggerated form, but with the same essential basic characteristic, the cargo cult is embedded in the whole economic and psychological fabric of every developing nation. All developing countries—with the possible exception of China until a couple of years ago—look to the developed countries for economic motivation, rather than to their own resources. Such is the reliance of many developing countries on the developed, that support from the developed countries is often considered essential and indispensable. And yet, when the now developed countries were themselves developing during the 1700's and 1800's, there were no technologically advanced nations to which they could go for "aid", finance and technology. Self-reliance has done a very good job for the USA, and there is no reason why it should not do the same for any other developing country today.

To put the whole thing another way ; people often say, "what a pity there is no miracle cure for poverty". Well there is. It's called "work".

In the developed countries today, with their complex technologies and division of labour, production and consumption are quite separate in people's minds. Consumption means going to the shop or discount warehouse with money or credit cards in your pocket ; production equals jobs equals investment, design, market analysis, government grants for industry, pre-production promotion.......and so on. In developed countries the relationship between production and consumption has become separated. But in the developing countries, with their simple needs and low technology, production and consumption are still closely related, particularly in rural areas. People need food, therefore they cultivate. They need homes, therefore they quarry stone or make mudbricks, and build. They want entertainment, so they sing and dance. The producer is the consumer. The consumer is the producer.

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* Wales/G. B.

** This article in the fifth in the series of articles published by the author.
—Editor.

Many government schemes in developing countries overlook this close relationship between production and consumption. They design a model for mass housing, pre-fabricate the parts in some centrally situated factory (probably near the capital city and owned by a wealthy industrialist) ; then transport these parts to the site together with expert "imported" workers who assemble them into instant blocks of flats with the aid of an enormous crane. Slum clearance. An admirable objective. The problem is of course that the slum-dwellers have no jobs and therefore no incomes to pay the high (for them) rents, or to the higher standard of living (furnishings, electricity etc) which living in the new flats would demand. So the flats remain empty for a respectable length of time, after which they are allocated to middle-class industrial workers. And the slums which they replaced grow up somewhere else. This is in fact a fairly common pattern.

The moral of the story is not that factories should have been built together with the new flats, though that would be a good idea. More important and of prior consideration however is the basis on which the housing is built, any by whom it is built. The ideal and immediately solution is to observe the simple and practical rule : let those people who want to consume do the producing. That is nature's simple law ; in a rural developing country we do not yet need to improve upon it.

With this new scenario, the slum-clearance project would be handled differently. First, an international competition would be held for the design of a basic house, two stories only, with courtyard in the traditional style, constructed as basic components which can be changed around to give variety or increased as needs and wealth increased. The design must be simple to build from locally available materials and simple to erect. The arrangement of housing units, spaces, access paths, and community facilities would also form part of the competition. (See May 1976 issue of Architectural Record, McGraw-

Hill, New York). A development agency would provide the minimum essential know-how and supervision ; apart from that, the houses are built entirely by...yes, the people who want to live in them. They dig the drains, lay water pipes, prepare foundations, quarry the stone or make the mudbricks, and finally build the houses to whatever stage of completion or size each may want or need. And when you've finished the house : it's yours. No wages, no investment, no unemployed homeless people who cannot afford the high price. Just people, who need homes, who build them, and then live in them.

The need to consume is a universal necessity. We have *Got* to consume, or we die. Fail to consume food, and we will die fairly quickly. Failure to use such services as health education and health-care can result in death more slowly. Lesser degrees of need to consume give us comforts, pleasure, entertainment. We have got to consume, that we know. We also know that, with very few exceptions, if we are going to consume we have to produce. This is instinct, born into every one of us. We know we must consume and produce ; we have a tremendous instinct and will to produce. To make a country function, to apply the wonder remedy for poverty, we need not so much *CREATE* work, as remove the barriers preventing people from creating their own work by simply producing by and for themselves those goods and services they want and need to consume.

Many economists look at the Indian economy, then at a developed Western economy, and remark with a heavy sigh of desparation that it would take a tremendous effort of organization, capital, and (of course) foreign aid to get the Indian economy really moving, and even then, it would be decades before the whole of the Indian economy had caught up. This attitude ignores the tremendons power of self-help just waiting to be released. Poor people the world over want and need to consume, and they also want and need to produce, The force is there, the initiative is there. The need is for political organization to remove the social-political barriers, to remove and prevent exploitation, to provide guidance towards efficiency and cooperation, and to ensure the essential backup institutions of banking and infrastructure services exist and function competently and justly. Once everyone is working, they will gradually improve their productive efficiency and thus their prosperity.

The overall policy of self-reliance needs to be applied not only at national, but at local level. Political, financial and administrative organizations and institutions must be available at local level, directed to local needs. One of the less publicized features of Switzerland is a high degree of regional self-reliance. Local people operate factories, work in them, and buy their produce ; this creates stability particularly in times of economic downturn, for closure would affect people both as consumers and as producers. Contrast this with the multinational-owned factory in a developing country making typewriters for export. One day the New York management decides that a different location in a different country is cheaper. Overnight 1,000 jobs are lost,

Let the developing economy build itself on its own resources, supplying its own needs. If sensibly and actively pursued, this policy will soon begin to show success, and in the longer term will provide a sound and reliable foundation.

Foreign Trade and Tourism

While concentrating without question on self-reliant development, that is, development of the nation's own resources for the nation's own consumption, tourism and foreign trade can nonetheless give considerable assistance to self-reliant development, provided always that it takes a subordinate, supporting role.

Tourism

Tourism offers a number of advantages ; in general it gives support and added revenue to existing services. For a start, tourism generally supports public transport, and in India particularly, especial use may be made of the extensive national railway system. Tourism also gives important support and incentive to the preservation and maintenance of nation's irreplaceable heritage of historic buildings and places of outstanding natural beauty. Tourists also provide an important market for local crafts and handiwork. The hotel and catering industry is highly labour-intensive ; and tourism is known to have an important effect, creating spin-off jobs and increased trade for diverse industries from taxies to laundries.

Apart of course from the foreign currency earnings, tourism has other less direct advantages such as the generating of a wider international goodwill and understanding a widening of horizons and experience both for the visitors and for the hosts. It also helps raise standards, in transport, catering, hotel accommodation, even in urban utilities, such as power, street cleaning, paving, and so on.

It is important however that a nation should offer itself, as it is, rather than attempting to provide segregated tourist facilities, of the anonymous "international" brand. Tourism and tourist facilities should as far as possible be a part of, and integrated into the normal life and fabric of the host country, so that both visitors and hosts may gain benefit from one another.

Foreign Trade

In addition to providing a wider market for certain suitable large-scale industries, foreign trade can be used to advantag to support and encourage smaller craft and handiwork industries. For example, if purchasing and stocking are planned intelligently, they can provide a regular flow of orders and regular cash-flow for small producers, and can take goods as and when production is most convenient to the producer (for example, craft work is often done during periods when demands of agricultural work are lower). Again, as with tourism, foreign trade can help raise standards by subjecting goods to the demands of discerning developed markets.

Marketing Strategy

Both with tourism and general trading, it is important that the producing country should not sell cheap simply so that others can buy cheap and then sell dear! The objective should be to follow right through to the consumer, thus taking in the more lucrative and profitable end of the chain. In this this way the producer can improve his profit while still offering the consumer an attractive bargain.

In the case of tourism, a national organisation should coordinate transportation, hotels, local facilities and sights, in order to market a range of complete package holidays direct to foreign travel agents and the public. A quarterly travel magazine featuring sights in full colour and details of latest suggested tours (similar, for example, to "Travel to the USSR"), can be sold at little over cost price to interested subscribers, thus providing the Tourist Organization with free publicity.

In the case of foreign trade, Indian Trade Centres in all major capitals would provide the focal point for a direct marketing strategy (or far more practical use, one might add, than an Embassy).

The Indian Trade Centre in each major capital should of course be staffed by Indians, and should offer a wide selection of Indian goods direct to the public on the spot for personal shoppers, and through mailorder (an increasingly popular facility offering lightweight, mid-priced items). Sales can also be made to trade buyers at appropriate discounts.

The Indian Trade Centre should be large enough to offer "department store" direct sales to the public, as well as space for changing trade exhibitions, and a selection of facilities re-creating the spirit of India—eating facilities from snacks to formal restaurant offering regional specialities, a small lecture hall cum cinema for talks, recitals of Indian music, as well as Indian documentary, travel and feature films. Indian holidays would also be on sale here of course. There is no doubt that such centres would rouse tremendous interest, and create important markets for all types of Indian goods, and tourism.

Tourism and foreign trade can provide valuable foreign currency, support for industries both major and small crafts, and can raise standards generally. Important provisons are that tourism and foreign trade must first and formost be subordinate and supportive to self-reliant development; furthermore foreign trade and tourism must be planned and coordinated, lively and active in sales and promotion and they should be aimed at the foreign consumers direct.

Foreign currency earnings should in principle be used in accordance with the guidelines of Priority Planning. Hopefully those concerned in formulating priority planning will in turn make use of every last cent of foreign currency earnings in ways which will provide maximum benefit to the overall development of the economy.

Alexander M. Haig on Future of Soviet Union

I would like to point out one aspect of that world view that I think we Americans must keep a very, very clear eye on as we assess the sacrifices that are facing us in this period ahead to remedy the problems you have outlined. That one is that we are not facing the inevitable and inexorable supremacy of Marxism-Leninism as a system. Quite the contrary, it is a profound historic failure.

If one measures the success of the Soviet brand of communism, we find economic shortfalls that are increasing in severity over the last three to four years. We find an agricultural basket case in the history sense. Despite the fact that Soviet leadership his driven larger and larger segments of their population into agriculture, the consequences have not been remunerative.

We find growing demographic problems with the Soviet system, as the non-Soviet populations begin to thrust for greater autonomy and a greater voice in the conduct of Soviet policy. We find that transmitted into the Eastern European zone of influence.

What I suggest by that is, if we Americans, and we Western nations, those who share common values, have the values and disciplines to get our act together and to move in concert, and to manage this very dangerous period at the far end of a decade or more, I think we are facing a period of utmost opportunity and promise.

Why is it so dangerous...this decade facing us? There are two converging relations. On the one hand, we have this growth in sheer Soviet military power, which some years ago my friend, Helmut Sonnenfeldt, described as inorganic because it was not accompanied by growth and success in the other segments of the Soviet society, and simultaneously these pressures, these manifestations of failure.

We know that since the day of the revolution to today's Soviet Union that the Russian elite, if you will, have...(protected)...their control of the apparatus of power in the Soviet system.

Now I suppose today roughly 50 percent of the socialist Republics are non-Russian in ethnic background. And that figure is going to change rather dramatically in the period ahead as you assess the bur geoning birth rate of the non-Russion populations, especially the Moslem republics of the southern Soviet Union. And you look at the declining birth rates of the elites—of the Russian populations. It's a rarity today to find a Soviet family with more than one or two children.

So the relations are going to change and, as I said, that's going to result in pressures for greater autonomy by these non-Russian populations, for a greater voice in the conduct of Soviet policy.

Now these failures and these difficulties, combined with the ones we talked about in the economic, agricultural and energy field, which was also a challenge for them, I think the Soviet Union, will share very generously with the Eastern European partners these failures. And these are going to fall on already virulent centrifugal pressures within Eastern Europe. And so, we have there the genesis for considerable difficulty within the Soviet Union and its sphere of influence.*

* Extracted from the testimony of secretary of State-designate Alexander M. Bigh, Jr. at his nomination hearing before the Senate Foreign Relations Committee at the January 10 session. —Editor,

NEW TECHNOLOGY

One-third of all steel produced in the Soviet Union is smelted from scrap metal. The production of steel from scrap metal is 25 times cheaper than steel production from iron ore and consumes less energy. Efforts are being made to ensure that all paper waste is used for the second time. For the time being, part of paper waste is burnt. Although two-thirds of paper waste are used for the second time at present, this practice saved 60 million cubic metres of commercial timber, an equivalent of 500,000 hectares of forest, between 1971 and 1978. The need to fully use all types of waste is prompted not only by the high level of production but also by the new ecological situation. Maximum use of all waste will not only save materials but also help improve the environment. The USSR State Planning Committee has recently set up a special department to plan comprehensive use of all types of waste A lot of attention is being given today to heat recycling. The Soviet Union consumes about 2,000 million tons of conventional fuel a year. As a result, secondary thermal resources estimated at almost 350 million gigacalories are produced. More and more industrial plants in the USSR use vapour, not water and gas for heating purpose instead of discharging them into the atmosphere after first use.

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ECONOMIC AFFAIRS

Volume 25 December 1980 No. 12

Which Way

The political air of India is polluted by the skirmish that Mrs. Indira Gandhi, Prime Minister of India and President of All India Congress (Indira), contemplates to change the present Western type of Parliamentary system of government to one of Presidential form. Those who are in oppositions have become very much vocal on one or more than one of the following grounds: that the present system is not unsuitable; that after some mendings here and there it may be made extremely useful for the country; that the American Presidential form of government is not foolproof; that more democracy is assured to the people in Parliamentary type than in Presidential form; that Mrs. Gandhi, ambitious as she is, wants to be the life-time President of India; that she also seeks to found a dynastic Presidential form of government. The oppositions are divided in emphasis; while the Bharatiya Janata Party (core Jana Sangh) is afraid both of Mrs. Gandhi's authoritarianship and of her dynastic outlook, the 'left and democratic front' with communist outlook, which is very much in favour of party dictatorship in its absolute regime, is afraid of 'authoritarianship' as that will liquidate its base of 'democratic revolution'. The lawyers who have assumed a false notion that a country's Constitution is a legal entity and should therefore be the exclusive product of their brain wave have also been divided according to their allegiance: pro-Indira or anti-Indira.

Nobody cares for the people, i.e what the people do not want and what they want today and to-morrows. People are neither lawyers nor politicians. What they want to resist is that they must not be the products of power, money and laws and what they assert is that they will determine their own fate starting from the bottom climaxing in democratic centralisation in a pluralistic society. They want money for food, laws for social order, and power to exercise the limited position that should be given to each. Undoubtedly the Western democracy does not bear the essence of any of these. It has failed in

India. In other way around, a political system is a historial product; it grows from the soil of the country concerned, it cannot be exported nor can it be imported. India imported it. So it has started decaying from the very beginning in the economic front and its failure in political front was well highlighted in the declaration of emergency.

Here comes the right place of Subhas Chandra Bose He was opposed to 'constitutionalism' and also to 'authoritarianism'. He had however no objection to certain amount of authoritarianism provided it was a 'revolutionery force' to implant a thoroughly modern 'Socialist State' which would stand for 'Social ownership and control of both production and distribution'. To quote him : "believe in a strong Central Government with dictatorial powers for some years to come, in order to put India on her feet". He spells out : "If we are to have an economic structure of a socialist character, then it follows that the political system must be such as to be able to carry out that economic programme in the best possible way. You cannot have a so-called democratic system, if that system has to be put through economic reforms on a socialist basis. Therefore, we must have a political system—a State—of an authoritarian character". He finds no danger in it for the nationalist movement in India had "identified itself with the interests of the masses". He goes so far as to comment that "because we have their interests at heart, there is no *raison d'etre* for a separate party like the Communist Party".

Bose was nowhere when 'modern India' was in the making. There was then Pundit Jawaharlal Nehru who found that the process of social evolution had its track either on Fascism or Communism. He chose the Communist ideal, in principle. But in practice he was against lopping off the private sector (i.e. capitalist sector). As a Communist, however, he urged at the same time that the building up of monopoly power of the private sector must not be allowed—"prevent that, control that, plan for that". This much and no further. He said, "you must not only permit the private sector, but, I say, encourage it in its own field." Indirectly he said to encourage Western democracy which is a prerequisite of private sector.

Now it has been found that private sector, public sector, demo-

(Continued on page 294)

Review

Income, Saving and Investment of Household Sector in Chittoor District, D. L. Narayana, S. Chand & Company Ltd, New Delhi 55, *Price Rs.* 35.00.

Sponsored by Research Programmes Committee, Planning Commission, Dr. D L. Narayana as the director conducted a survey in 1973-74 of 12 sample villages and 3 towns in the household sector having income range of Rs. 1500 to Rs. 25000 in Chittoor District of Andhra Pradesh. The objective of the survey is to ascertain the influence of the constitution and characteristics of the household sector on income generation, saving propensities and investment pattern in the district economy under reference to help planning of a balanced regional economic growth.

The survey reveals that the main source of income of about 67% of rural households is farming and 46% of urban households are in self-employed business, crafts and professions. The average sizes of rural and urban households are 5·4 persons and 4.9 persons respectively. In rural areas those who had attended high school constituted 25% and the corresponding figure for urban areas was 52%. It was found that 20% of rural households were in the income bracket of Rs. 1500-2500. Only about 4% of the total rural households were in the top income bracket. In urban areas more than 15% of total households were in the income bracket of Rs. 3501-4500 and about 7% belonged to top income bracket. The average net income per household was estimated at Rs. 5889 for rural areas and Rs. 6806 for urban areas.

It is also revealed that 52% of net investment in physical assets by rural households constituted land while urban households invested 27% in business assets, 26% in buildings and business premises and 7% in consumer durables. It is interesting to note that the urban educated invest more in building property and rural aged heads in land.

It is also reported that more than 35% of rural households were dissaving and about 65% had positive savings. The corresponding figures for urban households were 28% and 72%. The marginal propensities to save of rural households and urban households were 41.8% and 33.1% respectively.

The survey has enriched the field of knowledge of regional pattern of income, saving and investment. But it is too much to conclude that the level of education and the age-determined outlook of the chief earner of a household are reliable determinants of income, saving and investment. The determinants are more objective and direct than subjective and indirect in character.

(Continued from page 292)

cracy, socialist growth are opposing forces creating a mess in the body-politic of India. The point is how to get rid of it.

The days of Nehru's Fascism or Communism and Bose's transitional authoritarianship have gone. Democracy has its firm roots on Indian soil and Communism within 60 years of practice has faced deep crisis in the communist world itself The social evolution strongly indicates that the world's next phase is socialism adapted to national conditions. This should be upheld. And such political system should be adopted that will create a helpful climate for the advance of socialism. The developing countries have a greater responsibility in this regard as neither capitalism nor 'socialism' has settled there firmly. Besides, they require high speed in welfare growth which is possible only through socialist means. Obviously, India has a place to lead the rest.

In this perspective the personal or dynastic ambition of one is but a straw on the wind. The emergency proved it. If this is admitted in the longterm interest of the country then all oppositions against orientation of democracy in India will die down and a national consensus can be reached for a political system that will reflect the people's desire for socialism adapted to nationalism.

1980–Year of Recovery

The economic situation, as the year began, was extremely difficult, indeed, grim. Agricultural production had declined substantially; industrial production was stagnating, transport and power sectors had suffered almost total breakdown in certain parts of the country and other infrastructure sectors were facing serious problems. Production in many key industries was sagging Price level had been increasing at an alarming rate and inflation had hit the middle classes. Incentives to save had been eroded. Policy uncertainties had affected the investment climate adversely

Against this background, the paramount task before the Government was to nurse back the national economy to normal health. The thrust of Goverment policy was to augment domestic supplies and availability of essential commodities through better utilisation of capacity, arrangement of imports of essential commodities such as sugar and edible oil. Top priority was accorded to improving the working of key infrastructure sectors. The public distribution system, which had suffered neglect, needed revamping and revitalisation. Deterrent steps were intensified against hoarders, blackmarketeers and other antisocial elements. Efforts were made to minimise the budgetary deficits and to reduce the excess liquidity. Simultaneously, efforts were made to improve the investment climate and to boost the sagging levels of investment. Incentives were provided to increasing household savings, particularly to the middle classes; tax rebates were allowed on certain essential commodities and basic inputs with a view to making them available at reasonable prices to the consumers. A large number of steps were taken to ameliorate the conditions of the worker sections of the society.

Due to the steps initiated by the Goverment to improve production and to control prices, there is evidence of moderation in the inflationary pressures in the economy. The monthly rate of inflation has been of the order of 1 per cent in August and September, 1980 and 0.6 per cent in October, 1980. In November, there has been a fall of 2.3 per cent. In fact, except for the cost push imparted by the revision of oil prices in June, 1980 and the sharp increases in the prices of sugar, gur, khandsari, pulses and vegetables, the price increase in other groups of commodities has not been alarming. Inflation fanned by galloping oil prices is an international phenomenon and India's record in the current year in containing the rate of inflation appears to be better than that of many developed and developing countries. While this assessment should not lull us into a false sense of complacency, the international character of the current inflation should also not be ignored. Concerted efforts will continue to be taken to curb inflation further.

Some key economic indicators

		1979	1980	Remarks
1.	Inflation rate	19.6% (Jan -Nov.)	13.4% (Jan.-Nov.)	Lower by 6 2%
2.	Foodgrains production (million tonnes)	108. 85 (—17.5%)	132 (+ 22%) (Estimated)	For the crop year
3.	Industrial production	—1.4%	+ 4% (Estimated)	For the financial year
4.	G. N. P.	—5%	+ 5% (Estimated)	„
5.	Coal output	103 million	113 millon (Estimated)	„
6.	Power Generation	Expected to rise by 10% over last year.		
7.	Letters of Intent	421 (Jan.-Nov.)	733 (Jan.-Nov.)	
8.	Industrial Licences issued	324 (Jan.-Nov.)	439 (Jan.-Nov.)	

An Analysis of Foodgrains Production in Himachal Pradesh and Future Prospects

D. C. Sah* and Amar S. Guleria*

I

Introduction

Foodgrains (FG) production in Himachal Pradesh fluctuated closely around 0.94 million tonnes during early seventies. It reached the all time high level of 1.13 million tonnes in 1975 76, the year in which state government proclaimed food self-sufficiency. But again in the following year FG production went down to 0.93 million tonnes, and even in 1977-78 the production was marginally lower than 1975-76 level. However, by the end of 1983 the target production of FG is placed at 2.71 million tonnes.

Since the economy of Himachal Pradesh is predominantly an agricultural economy, where FGs alone account for more than 90 per cent of its gross cropped area, the questions why the FG production is stagnating, and on what factors it rests, become critically important to forsee whether the state can attain such a high target. The present paper is an attempt in this direction. More specifically, the attempt is made first to identify quantitative importance of yield, area and cropping pattern in influencing the year to year changes in FG production. And, second, to analyse the economic rational working behind the movement of shifts in area and yield. Such an attempt will not only help to understand the anatomy of foodgrain economy of Himachal Pradesh but will also spell out in clear terms the policy interventions inevitable for rapid growth in FG production.

Data used in the present study were compiled from the various publications issued by the Directorate of Land Record, and

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* Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad 380015. Authors are indebted to Prof. Gunvant M. Desai for the stimulus discussion on the process of agricultural development of hilly regions.

Directorate of Economics and Statistics, Himachal Pradesh. Similar data were collected from the Directorate of Land Record, Punjab, as some parts of the state were included in Punjab. Therefore, data used in this study relate to present Himachal Pradesh traced backwards, and refer to the period 1966-67 to 1975-76. Information pertaining to yield response to fertiliser use on high yielding varieties and traditional varieties of cereals is collected from the Research Station, Palampur, Himachal Pradesh.

II

Relative Importance of Change in Area, Yield and Cropping Pattern

The contribution of area, yield, crop mix and their interaction in FG production during the period under study have been presented in Table 1.[1] It may be observed from the table that the total FGs production increased by 426 thousand tonnes during the period 1966-67 to 1975-76. In this modest growth, the relative contribution of area and yield was as high as 96 per cent, and cropmix and interaction components combined accounted for only 3 per cent. It is important to note that the contribution of yield in FG production was about five times higher than the contribution of area under foodgrains, and eighty times more important than change in cropping pattern.

It may further be seen from the table under reference that in 6 out of 8 years with positive increase in FGs production the contribution of yield of FGs was substantially higher than that of changes in area or cropping pattern. Two exceptional years when the yield declined were 1969-70 and 1972-73. In these years, in spite of substantial increase in area under FGs, the total increase in production was marginal. In 1971-72 FGs production declined mainly due to the decline in yield, though the decrease in area under total FG and relative shift in the cropmix were also responsible for this decline but to a lesser extent.

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[1] These estimates are based on identity developed by B.S. Minhas and A. Vaidyanathan, "Growth of Crop Output in India, 1951-54 to 1958-61: An analysis by Component Elements", *Journal of Indian Society of Agricultural Statistics, Vol. 17(2), 1965.*

Table 1 : Year to Year Change in Foodgrain Production and its Components, 1966-67 to 1975-76

Year	Total FG production	Change in FG production over the previous year	Change in FG production due to change in			
			Area	Yield	Crop-mix	Interaction
1	2	3	4	5	6	7
1966-67	703	—	—	—	—	—
1967-68	871.2	168.15	39.50	130.72	—4.51	2.43
			(23)[a]	(78)	(—3)	(1)
1968-69	919.8	48.66	5.02	31.79	12.69	—0.84
			(10)	(65)	(26)	(—1)
1969-70	921.9	2.12	7.80	—8.47	—0.26	3.05
			(368)	(—400)	(—12)	(144)
1970-71	974.1	52.19	5.59	51.91	—4.60	—0.4
			(11)	(99)	(—9)	(1)
1971-72	934.7	—39.47	—10.75	—31.71	—2.09	5.98
			(27)	(80)	(8)	(15)
1972-73	945.8	11.11	23.16	— 8.10	—9.34	5.39
			(209)	(—73)	(—84)	(49)
1973-74	952.5	6.69	—19.80	22.13	0.20	4.16
			(206)	(331)	(3)	(62)
1974-75	1064.5	112.06	7.44	99.97	14.51	—9.86
			(7)	(989)	(13)	(—9)
1975-76	1129.0	64.44	10.44	53.80	0.67	—0.47
			(16)	(83)	(4)	(—[b])
Between 1966-67 and 1975-76		426	68	342	6	10
			(16)	(80)	(1)	(2)

(a) Figures in parentheses are percentage to total change in FG production.

(b) Less than .5 per cent.

Thus, it may be pointed out that changes both in total area and in yield of FGs have consistantly affected year to year changes in FGs production but the relative importance of change in yield of FGs was much more. The effect of relative shifts in-between area of different cereals and pulses was marginal.

III

Factors Affecting the Shift in Cropping Pattern

Preceding section has clearly brought out that changes in cropping pattern had very low effect on growth of total FGs production. This is because there is marginal shift in area from low yielding coarse grains and pulses towards high value crops, e.g. maize, wheat, paddy during the period 1966-67 to 1975-76. This section brings out inability of price-factors to bring about the shift in cropping pattern in FGs.

Maize and paddy in kharif and wheat in Rabi are the staple FGs. These accounted for about 80 per cent and 88 per cent of the total FG areas in early sixties and 1975-76, respectively. It may be observed from the chart that the relative importance of area under wheat in cropping pattern increased from 35 per cent in 1966-67 to nearly 39 per cent in 1975-76 whereas the importance of maize increased from 27 per cent to 31 per cent. This shift was maintained in subsequent years in spite of the unfavourable prices of these crops. In fact, the relative importance of paddy, barley and ragi in the cropping pattern was maintained even after their relative price deterioration between the period 1962-63 and 1975-76. Similarly, the incentive of rise in prices of the pulses did not bring additional area under these crops. It may be concluded that the factors other than prices were the main reasons of increase in relative importance of maize and wheat in cropping pattern.

It is the superior yield response of the crops due to the technological changes in the form of HYVs which is responsible for this shift. This has been explained in table 2, which gives yield response and the economies of fertilizer use for different varieties of wheat and maize in Himachal Pradesh. Yield incentive to shift from traditional varieties or minor FGs to HYVs is significant only for irrigated maize and wheat. This is because it is economical and attractive to adopt fertiliser in these situations only (see columns

3 and 5 in Table 2). However, the incentive to increase the rate of fertiliser application is economically more attractive only in the case of HYVs wheat under irrigation (see column 6). On the contrary, the cost benefit ratio clearly reveals that it is economical to fertilise unirrigated HYV wheat and maize both local and HYVs irrigated as well as unirrigated, at low rates only.

Table 2 : Yield Response and Economics of Fertilizer Use on Wheat and Maize in Himachal Pradesh

Crop/location	Yield without fertillser	Increase in yield over(2) at 40 kg/he nitrogen use	Increase in yield over(2) at 60 kg/he nitrogen use	Net returns from fertiliser use[a] Adoption of nitrogen[b]	Net returns from fertiliser use[a] Increasing rates
1	2	3	4	5[b]	6[c]
		Qut. per hect.		*Rs. per hect.*	
Kangra wheat irrigated (1975-76) :					
HYV	14.3	9.61	8.65	760.(5.6)[d]	464 (6.7)
Local	11.3	6 03	5.43	426.(3.1)	366 (4 8)
Una wheat unirrigated (1976-77) :					
HYV[e]	11.1	3.44	3.10	218 (2.1)	221 (2.1)
Una maize irrigated (1976-77) :					
HYV	17.9	9.21	8.29	574 (4.1)	—113 (—1.6)
Local	16.9	4 48	4.03	207 (1.5)	43 (0 6)
Una maize unirrigated (1975-76) :					
HYV	16.7	4.33	3.90	196 (1.4)	60 (0.9)
Local	16.8	3.97	3.57	168 (1.2)	74 (1.1)

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a. Arrived at by taking nitrogen prices at Rs. 3.15 per kg. and wheat and maize prices at Rs. 1.15 and Rs. 0.95 per kg. respectively. An additional cost of Rs. 0.10 is added as labour cost of applying a quintal of nitrogen and interest on working capital at a rate of 14 per cent per annum for 6 months is added to the cost of using fertiliser. For making economics risk-neutral at cultivators' field the crop response and crop prices are discounted by 10 per cent.

b. Adoption of fertiliser at 40 kg. of nitrogen per hectare.

c. Increasing rate from 40 to 60 kgs per hectare.

d. Figures in parentheses are Incremental Cost Benefit Ratio.

e. For dry wheat fertiliser applied over control at a rate of 30 and 40 kgs per hectare respectively.

The above analysis, though based on experimental data, indicates clearly that the economic benefit to increase area within the existing technology was constrained by the level of irrigation, as superior yield response of maize and wheat was confined to irrigated conditions. 1966-67 to 1968-69 was a period when there was a rapid increase in irrigation (refer to Table 3). This was responsible for the economically stimulated shift in area from minor foodgrain crops to irrigated maize and wheat.

IV

ASSOCIATION BETWEEN CHANGES IN YIELD OF FGs AND FACTORS AFFECTING YIELD

Factors which affect the yield are (i) weather, and (ii) such variables as irrigation, HYVs, and fertilizer use. This section focuses on the changes in these factors and their effect on changes in FGs production and average yield.

Table 3 shows the level of FGs area irrigated, area under HYVs of FGs and fertilizer use between 1966-67 and 1975-76.

Table 3 : Irrigated Area Under FGs, HYVs Area Under FGs and Fertilizer Use, 1966-67 to 1975-76

Sl. No.	Year	Irrigated area Under FGs ('000 he)	HYVs Area Under FGs ('000 he)	Total Fertiliser Use (Tonnes)
1	2	3	4	5
1	1966-67	128.9 (16.6)[a]	3 (0.4)	2223 (2.6)[b]
2	1967-68	132.6 (16.2)	13 (1.8)	4668 (5.0)
3	1968-69	136.5 (16.6)	21. 3 (2.6)	4760 (5.3)
4	1969-70	135.7 (16.3)	100 (12)	5057 (5.6)
5	1970-71	135.7 (16.2)	150,9 (18)	5070 (5.6)
6	1971-72	139.9 (16.9)	201 (24.3)	8149 (9.0)
7	1972-73	143.0 (16.9)	230 (24.7)	7769 (8.4)
8	1973-74	136.2 (16.4)	315 (38)	8647 (9.5)
9	1974-75	131.7 (15.8)	270 (32.3)	9200 (10.0)
10	1975-76	130.88 (15.5)	375 (44.4)	8900 (9.6)

a. Percentage to total FGs area.

b. Fertilizer use in kg per hectare of gross cropped area.

It may be seen from the table under reterence that the irrigated area under FGs increased from 129 thousand hectares in 1966-67 to 143 thousand hectares in 1972-73 and then shrank to 131 thousand hectares in 1975-76 Only 16-17 percent of area under FGs are irrigated. Against a slow increase of irrigated area, the FGs area under HYVs increased rapidly from less than 3 thousand hectares in 1966-67 to 375 thousand hectares in 1975-76. Consequntly, diffusion of HYVs in irrigated area is over and substantial portion of HYVs is under rainfed conditions. Fertliser use increased from 2 2 thousand tonnes to 8 9 thousand tonnes between 1966-67 and 1975-76.[2] In spite of the increase in fertiliser use, the per hectare consumption in the state is less than 10 kg, nearly 50 percent less than the all India level. From the table under reference it appears that the fertiliser use was stagnant after 1973-74 at 9 kg per hectare.

The year to year change in average yield of FGs and the change in yield increasing factors may be observed from Table 4.

A scrutiny of the table under reference shows that there was a very weak association between year to year change in yield increasing inputs e.g., irrigation, HYVs and fertilisers with year to year change in average FGs yield On the other hand, weather had substantially affected the level of yield.

To illustrate, the four years when the year to year changes in FGs production were very low or negative (1969-70, 1971-72, 1972-73 and 1973-74) were not the period when the year to year changes in irrigated area, HYV area and fertiliser use were very low. But in these years the deviation of rainfall from the normal was substantial to cause an ill-effect on average FGs yield as well as FGs production.[3] The weak association between the year to year changes in either total FGs production or average yield and change in irrigated area, change in fertilizer use, and change in HYVs area is shown by negative, low and non-significant co-efficient of rank

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2. Fertiliser refers to all crops. However, about 97 per cent of total Nitrogen and nearly whole of Phosphate are consumed by three FGs : Wheat, Maize, and Paddy in 1975-76. See National Council of Applied Economic Research, *Fertiliser Demand Study Vol. 4*, NCAR (Mimeo).
3. More than 19 per cent deviation in rainfall from the normal is an indicator of an abnormal weather.

Table 4 : Year to Year Changes in Foodgrains Production, Yield and the Yield Increasing Factors

Year	Total FGs Production	Total FGs Yield	Irrigated Area under FGs	HYV Area under FG	Fertilises use	Weather[a]
1	2	3	4	5	6	7
	Change over previous year					
	'000 Tonnes	Qt/Hect	'000 Hect		Tonnes	Per cent
1966-67	—	—	—	—	—	—
1967-68	168.15	1.56	3.70	10 0	2445	15.8
1968-69	48.66	0.53	3.90	8.3	92	18.8
1969-70	2.12	—0 07	—0 80	78.7	297	36.3
1970-71	52 19	0.56	—0 01	50 8	13	33.5
1971-72	—39.47	—0.35	4.20	50.2	3079	36.5
1972 73	11.11	—0.14	3 10	79 0	—256	23.6
1973-74	6.69	0.32	—6 80	35.0	754	15.7
1974-75	112 06	1.58	—4.50	—45.0	553	16.5
1975-76	64.44	0 64	—0.80[b]	105.0	—300	23.1

a. Rainfall has been used as a proxy of weather. Column (7) is percentage deviation of rainfall from normal. Deviation from normal is weighted average deviation of Kharif and Rabi season's rainfall, ignoring the signs of each season. This is because a + 25 per cent deviation of rainfall from normal has as distructive effect on yield as − 25 per cent deviation from normal. Areas under FGs during Kharif and Rabi were used as weights.

b. Likely increase.

correlation. Whereas the correlation co-efficient between change in production or averages yield of FGs and weather is positive and significant. This may be seen from table 5.

Table 5 : Spearman's Rank Correlation Co-efficient between Year to Year Change in FGs production Yield, Share of Yield and Major Yield Increasing Factors

Description	Change in FGs production	Change in FGs Yield	Share of FGs Yield in Change in FGs production
1	2	3	4
Change in irrigated Area	—0.10	—0.32	—0.18
Change in Fertilisers Use	—0.20	—0.01	—0.12
Change in HYVs Area	—0 30	—0.42	—0.37
Deviation in Rainfall from Normal	+0.57	+0.60	+0.65**

** Significantly different from zero at 10 per cent level.

Not only the year to year changes in the individual inputs have low association with changes in FGs production or yield but also the annual changes in FGs production or yield and the three yield increasing factors *taken together* have weak association This clearly shows that irrigated area under FGs, area under HYVs of FGs and fertiliser use *taken together* were neither able to neutralise the ill-effect of weather nor able to generate a sizeable increase in FG production in good weather years.

Though the inputs HYVs, fertiliser and irrigation are synergetic it is irrigation rather than HYV or fertilisers which had constrained the yield in Himachal Pradesh. The argument will be clear if we once again analyse Table 2. About 17 percent of FG area in Himachal Pradesh are irrigated whereas HYVs cover about 45 percent of the FG area. Though such a large proportion of FG area is under HYVs, it is only a small fraction of this area under irrigated maize and wheat which is potential to influence yield positively. In rest of the area yield fluctuates up and down with monsoon.

This paper thus raises the issue whether FG economy of the region can be set free from vagaries of monsoon or not. For this, it becomes pertinent to analyse first the progress being made in developing and adapting technology for rainfed agriculture and second, to understand the investment priorities within different heads in the economy. Since the objetives of the paper are properly defined, these issues have been left unanswered.

V

Summing up

The growth in FGs production in Himachal Pradesh has been steady but low, and achieved mainly due to increase in per hectare yield. The effect of relative shift in the cropping pattern and increase in area under FG on the total increase in FGs production were low.

The year to year changes in per hectare yield of FGs have been influenced more by weather rather than by the yield increasing inputs *taken together*. Two main reasons for this are (i) the low growth and finally stagnation in the irrigated area under FGs. By 1970-71 the diffusion of HYV seeds on irrigated area was complete, as a result the diffusion of fertilizer use on irrigated HYVs had little scope after 1970-71. Consequently, fertiliser use started slowing down and remained stagnant at 9 kg per hectere thereafter. And (ii), poor economic incentives to fertilise unirrigated wheat and maize areas even at low rates.

To increase the FGs production in future and to set free the yield from vagary of weather, the combined effect of yield increasing inputs, specially fartilizers, HYVs and area under irrigation, has to leave the past trend.

This trend would remain unaltered until and unless the water potentials are exploited fully. The State is endowed with water resources such as khads (river), nallas etc., flowing throughout the year and surrounded by the vast agricultural land which is mainly rainfed. But efforts to tap such potency appeared to have been ignored. Since a sizeable growth in fertiliser use year after year is tied up with the growth in irrigated area and diffusion of HYVs in newly irrigated areas, the prospects of rapid and sustained growth of FGs production depend on vigorous policy measures based on the urgency and complexities of the problems.

The other critical obstacle in breaking the sluggish FG production in the state is technological stagnation. HYVs in irrigated areas have not generated economic attraction to be considered as alternatives to the local varieties. The necessity at present is not so much of developing new HYVs but is to adapt the existing high yielding varieties to harsh agronomic conditions so that these can respond to increasing doses of fertiliser application.

Payment Balances On Current Account

(Billions of US$)

	1973	1979	1980
Industrial Countries	19.3	—9.8	—50
Developing Countries			
Oil Exporting Countries	6.6	68.4	115
Non-Oil Developing Countries	—11.5	—52.9	—70

| Source : IMF.
| 1980 figures are projections.

Economics of Leasing System in Bankura District, West Bengal

Arabinda Mitra* and B. N. Banerjee*

Land reforms have two specific objectives in view—firstly, to reform such motivational and other impediments facing agricultural production and arising from the rural structure inherited from the past and, secondly, to eliminate all elements of exploitation and social injustice within agrarian system so as to ensure security for the tiller of the soil and assure equality of status and opportunity to all sections of the rural population. After independence many economists, social reformers, political leaders, and agricultural policy makers have contemplated over the land tenure system and they have reached the conclusion that our land tenure system is highly defective and acts as an obstacle to the growth of our national economy.

In India a major part of land is dominated by pure tenants or part tenants and the contracts or agreements between a landlord and a tenant are verbal and the rent charged by the owner of land is vulnerable. The State of West Bengal is not exceptional to it. Through the defective agrarian tenurial system, in course of time, there developed two distinct classes in rural area, viz., the parasitic rich landlord class and the down-trodden peasant class exposed to the mercy and exploitation of the former. However, in this tentative work prima facie objective is to study the impact of different systems of tenant farming on agricultural production. The broad objectives of the present work, however, are to study (i) the different classes of cultivators existing in the studied area and sharing systems; (ii) the output-input relationship among the different classes; and (iii) the efficiency of resource allocation among different classes of tenurial systems.

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Methodology

The Bankura district has been chosen purposively and the Block Chhatna has been selected randomly. The village Simulberia being dominated by tenant cultivators has been purposively selected for the present study. The village is comprised of 80 households out of which 25 are pure share-croppers and 20 are part-owners/part-share croppers. All these cultivators and fifty percent of the owner cultivators selected randomly have been included in the present study. Two types of analytical tools viz., tabular analysis and functional analysis have been adopted to fulfil the various objectives formulated for the study. More emphasis has been given upon tabular analysis so that the problems and lacunae of the tenant cultivation could be studied deeply.

In the belief that Cobb-Douglas type of production function fits well in agriculture, it has been estimated by least-square technique. The specification of the function is as follows:

$$Y = \alpha X_1^{\beta_1} X_2^{\beta_2} X_3^{\beta_3} \quad \text{————————(1)}$$

where, Y = Returns (Rs.) per hectare, X_1 = human labour (man-days) per hectare, X_2' = Bullock team (days) per hectare, X_3 = Working capital per hectare, α = constant, β_1, β_2 and β_3 represent elasticities of coefficients of inputs.

RESULTS AND DISCUSSIONS

Existing Classes of Cultivators in the Study Area

Three distinct categories of cultivator groups have been observed in the studied area, viz., owner cultivator, part-owner-part-share cultivator and pure share-cropping cultivator (tenant). An important fact has been found that those who are tenants they either belong to scheduled caste or scheduled tribe. No person belonging to upper caste has been found in tenant group.

The main reasons why a person leases his land have been observed to be as follows :

1. That the owner of the land resides outside the village.
2. That he is engaged in other types of job so that he has little time to pay attention in farming.

3. That the owner is widow, old or lady.
4. That he is reluctant to change traditional system and describe self-farming as a difficult job.
5. That he holds large, scattered and fragmented holdings and cannot manage all his holdings. Hence a part of land is leased out by him and in the first instance he prefers to lease his worst or less fertile land and tries to keep better types of land under his cultivation.
6. That his financial position is too weak and he is not able to meet up all the costs of cultivation.

It is believed that the tenant farmers are less privileged and worst affected group. But still a major group of farmers falls in this category. The main reasons of tenancy cultivation enumerated in the studied area have been given below :

1. That having a very small and uneconomic holding he wishes to increase his size of holding.
2. That there is no other alternative employment opportunity and he is also not skilled for other jobs.
3. That he prefers to remain under a landlord since during his disastrous condition some types of jobs or shelters or debts are provided by the landlord.
4. That he is reluctant to leave the village and reside in a town

Share System

In all cases agreements between the landlord and the lessee are oral and unwritten. The tenant is not given any security of farming even for the next year. It has also been observed that part-owner/part-share group does not obtain any privilege other than what the tenant group gets when the former group receives a part of land in lease from the landlord. This group also has to face the same problem of informal tenancy and has to follow the same share system as is followed by the pure tenant group. The sharing system found to exist in the studied area has been presented in Table 1.

The village is mono-cropped one. Paddy is the only crop and is grown during aman season. Sometimes after paddy some pulse crop is being shown which requires no manures and fertilizers and its cost of production and yield are very low.

Table No. 1 : Supply of Input and Output Share Between Owner and Tenant

Items	Inputs Supplied by Landlord Share		Inputs (excluding land) supplied by leasee Share	
	Landlord	Leasee	Landlord	Leasee
1. *Land :*				
i) Sol Land	70% Paddy	30% Paddy		
ii) Semi up Land	60% Paddy	40% Paddy		
iii) Up land	50% Paddy	50% Paddy		
2. *Bullock Labour*	Additional 2.5q paddy	—	No additional paddy received	
3. *Seeds*	2.5 times of seed before sharing	—	No additional paddy	
4. *Manures*	50% straw	50% straw	33.3% straw	66.7% straw

Three types of sharing have been observed in the village viz., 70:30 ; 60:40 ; 50:50 between the landlord and the tenant. This is followed according to type of land leased by the landlord. However, if besides land some inputs are being supplied by the landlord, he gets additional paddy. It has been found that only 13% of the total leased land has been under 70:30 types of rental system which indicate higher rents cover less leased area, but it can be interpreted otherwise that percentage of fertile land under tenant cultivation has been minimum. Area covered by the 50:50 system has been highest, i e , about 47% of total leased area.

Cost-Return Analysis

Table 2 depicts the relationship between returns and cost per hectare of cultivation under different groups. Among the different types of tenancy system, it has been clear that per hectare gross cost of cultivation as well as gross returns has been least in the pure share-cropper group and above 1.00 hectare group has been most efficient.

Table No 2 : Output-Input Relationship in Different Groups

Sl.	Group	Input/ hectare (Rs.)	Output/ hectare (Rs.)	Gross income/ hectare before sharing (Rs.)	Gross income/ he. after sharing (Rs.)	Output-Input ratio
1.	Owner group (above 1.00 he.	1516.80	2513.50	996.70	—	1 657
2.	Owner group (below 1 00 he)	1380.18	2989.90	709.72		1.514
3.	Part-owner — Part-share group	1326 08	1813 36	487.28	375.20	1.367
4.	Pure share group	1004.13	1613.20	609.07	298.70	1.606

The table depicts that there has been wide disparity in per hectare cost and returns among different groups. A striking feature has been observed that expenditure of part-owner/part-share group has been nearly at par with the owner group (below 1.00 hectare). Yet the returns have been estimated to be Rs 275.54 less. It has been probably due to the fact that land under ownership cultivation has been more fertile than part owner/part share group since lessor prefers to lease his less fertile land and he has the tendency of retaining more fertile land under his operation. The causes of lower returns in the tenant group may be due to the insecurity of land and greater share of landlord in the production. Major portion of production goes to the landlord which is a discouraging feature for production and use of improved input by the tenant.

Table 2 also depicts that the output-input ratio (before sharing) has been higher in the case of pure tenant group than of the owner group (below 1.00 he.) and part owner/part share group and more or less at par with the owner group (above 1.00 he) Thus it can be said that if this unprivileged group is provided with adequate resources, capital and secure tenancy its production efficiency can be increased.

Functional Analysis

i) *Simple Correlation Analysis*

Table 3 shows the correlation coefficients between output value and input variables under different groups of tenancy cultivation.

Table No. 3 : Group-wise Correlation Coefficients

Sl. No.	Group	Area	Human labour	Bullock labour	Seeds	Manures & fertilisers
1.	Owner group (above 1.00 he.)	0.91*	0.90*	0.92*	0.79*	0-89*
2.	Owner group (below 1.00 he.)	0.87*	0.86*	0 93*	0.75*	0.76*
3.	Part-owner/ Part-share group	0.78*	0.76*	0 80*	0.58*	0.30
4.	Pure-share	0.89*	0.73*	0.51	0 81*	0.13

* Significant at 5 percent level of significance.

Table 3 reveals that area, human labour and seeds have been highly correlated with returns in all the groups. It has been observed that the values of correlation coefficients between output and human labour, output and bullock labour, and output and manures and fertilizer have been least in the case of pure share group. The wide variations in 'r' values can be analysed from the fact that this group has failed to supply these inputs adequately in time. Because they are capital starved and so depend on their own resources. Moreover, this group cultivates less fertile land which needs higher amount of inputs to obtain the optimum level of output.

ii) *Cobb-Douglas Production Function Analysis*

Cobb-Douglas production function has been fitted well under the different groups since the value of R^2 has varied from 0.62 to 0.83 in different groups under observation.

Table 4 reveals that only human labour is significant. This indicates that human labour is an economic factor of production. Consistent with correlation analysis, the elasticity coefficient for bullock labour has been found to be minimum in the pure share group, while this factor has been used moderately both in part owner-part share group and in owner (below 1.00 he.) group. This indicates

Table No 4 : Estimated Cobb-Douglas Production Function

Sl. No.	Group	Constant (in log)	Regression Coefficient Human labour (X_1)	Bullock labour (X_2)	Capital (X_3)	$\Sigma\beta i$	R^2— value
1.	Owner (above 1.00 hec.)	5.9	0.31*	0.40	0.38	1.09	0.83
			(0.07)	(0.06)	(0.08)		
2.	Owner (below 1.00 hec.)	1.38	0.69*	0.28	0.02	0.95	0.62
			(0.18)	(0.09)	(0.01)		
3.	Part-owner/Part-share	0.13	0.65*	0.24	0.13	0.80	0.75
			(0.21)	(0.08)	(0.05)		
4.	Pure share	0.12	0.61*	0.11	0.11	0.61	0.65
			(0.18)	(0.08)	(0.09)		

Figures in the parentheses are standard errors.

*** Significant at 5 percent level.**

that bullock labour used on the less privileged groups may be much superior in terms of energy supplied and work done compared to large groups. The elasticity coefficient for capital has been found either negative or too small for the less privileged groups. The positive coefficients of capital for the owner groups as compared to the negative value for the tenant and part-owner/part-share groups are quite comfortable with the substantially higher investment on inputs specially on manures and fertilizers on the former groups than the latter.

Conclusion

The fact that customary practice of sharing of crops remains still unaltered indicates desirability of some other arrangements than what the Land Reform Act provides in this respect. No reform is popular unless it is accepted by the interested parties. Measures aiming at permanent security for the bargadars like those incorporated in the West Bengal Land Reform Act may be desirable from the

(Continued on page 320)

The Role of India in World Development

Michael Meacock*

The 1917 October Revolution in the Soviet Union initiated the world's first large-scale attempt to base government, not on self-interest and exploitation, but on ideals of a decent life for all. Subsequently, and very regrettably, it turned out that Soviet Socialism was not objective and fair, nor even without exploitation or oppression. For although the previleged classes were divested of their previleges and the right to exploit others, it soon became apparent than any form of initiative was to be discouraged—if indeed initiative were permitted at all. So a kind of reverse exploitation was born; the hard worker was to subsidize the lazy man, and housing, healthcare, education, even holidays were to be guaranteed to everybody, whether or not they earned them. The end result is the inevitable and unending mediocrity which is today so prominent a feature of the towns and cities, shops, products and services of the Eastern Bloc countries. Added to that was Totalitarianism, government without the guiding discipline of any real form of popular control or democratic sanctions. And so, on top of reversed-class exploitation, came the oppression of a totalitarian government—oppression which grew more heavy-handed as the years passed and the prosperity-gap between Communist East and Capitalist West grew wider, a trend which could hardly be kept from the populace as tourism, radio and television eroded the barrier of the Iron Curtain.

The People's Republic of China, though currently accentuating the differences between itself and the USSR, has followed broadly the same pattern. Central direction of the economy is an essential feature, with the same results of low productivity and lack of coordination between supply and demand. Wages and prices are frequently centrally fixed without relation to work or to economic cost; and personal liberties still fall far below the minimum standards expected in Western democracies and in India itself.

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Policy-wise therefore, we have at present two choices, Free Enterprises/Capitalism, and Socialism/Communism. The Americas and Western Europe are dedicated to the first, Eastern Europe, the USSR and China to the second. Africa is a large uncommitted area; but it is too fragmented, and as yet politically too immature, to be anywhere near making a continent-wide commitment to Capitalism, Socialism, or a third new alternative. India on the other hand is a large yet unified entity, with a tradition of relative stability and democracy. In short, India holds a tremendous potential influence with the developing world, and so a commitment by India to a new Policy direction would be a world event of the utmost significance. Indeed, taking another view, many political observers both in and outside India are asking how long democracy can continue without a firm commitment to the discipline and purposefulness of a definite policy—and it goes without saying that neither Capitalism nor Socialism would be acceptable in pure form.

In this series of articles we have pre-supposed a clear and firm policy to be essential. It is essential in government to ensure discipline, and coordinated purposeful action; it is even more essential to our present exercise of attempting to arouse the country's thinking people to unified action, for without a commonly agreed and clearly defined policy, how can diverse people and institutions across the nation ever expect to speak with one concerted, and thus influential voice?

We have spoken of India's traditions of stability and democracy. To these sterling virtues may be added another, more distinctive characteristic: a strong inclination towards Non-Aggression as a way of life.

And so we had examined Non-Aggression as a political Policy, and found first of all that a very clear policy emerged, capable of application in all areas of legislation from personal liberties to land-use and the economy. Secondly, in comparison to existing policy options of Free Enterprise/Capitalism and Socialism/Communism, we found that a Policy of Non-Aggression occupies a middle way between the two. Under Capitalism, government exercises a low degree of control thus allowing exploitation of individuals by one another. Under Socialism/Communism, in contrast, hard workers support the lazy, initiative is suppressed, and in addition totalitarianism oppresses personal liberties. Both these choices favour one class against another ; both result in exploitation and oppression, Capitalism/Conservatism by allowing it, Socialism/Communism by creating it. The Policy of Non-Aggression however, looks upon all equally. It allows freedom up to, but not beyond the point where freedom intrudes upon other freedoms. It provides enough government control to prevent individual exploiting individual, but not enough to create exploitation by government. And a clearly defind Policy of Non-Aggression provides its own discipline over day-to-day interpretation and legislation by government.

With a clearly defind Policy of Non-Aggression, and an expanding bank of coordinated interpretation growing in universities and institutions, among special-interest societies and in the minds of thinking people, the way becomes open for a new style of government, open, democratic, disciplined, with a large fund of expertise in every field—expertise specifically directed towards action for development and prosperity—the whole guided by a Policy which is committed to Non-Aggression and yet which, through ensuring fairness and guidance, is in itself a very positive force for expansion and development.

India is known throughout the world, from Africa to Great Britain, for the enterprise and initiative of her traders and craftsmen. India has traditions of stability and democracy as well as non-aggression, which can now be harnessed and directed into political policy and legislation. And India has the size and the tremendous potential for development—development which can now be achieved without exploitation or oppression.

A new Policy, interpretation by the country's thinking people, a Policy of Non-Aggression applied with consistency and discipline.... could this be the role of India 'in world development—using her size, influence, and traditions to achieve prosperity without exploitation ?

Summary and Agenda for Action for Development

Across the world today, two giant political philosophies confront one another : Conservatism/Capitalism and Socialism/Communism. Neither is satisfactory in itself ; neither ensures an absence of exploitation and oppression by individuals or by government, and neither ensures a steady growth in overall prosperity. A new Policy, reflecting a new social direction, is now urgently needed

India's magnitude both demands a solution to these issues, and lends world influence to her eventual decision ; India's traditions of stability and democracy allow the freedom of thought and debate which could lead to the emergence of a new Policy ; and India's tradition of Non-Aggression points to a significant, as yet untried political policy option.

The political Policy of Non-Agression occupies a middle way between Capitalism/Conservatism and Socialism/Communism. Under Capitalism/Conservatism, government exercises a low degree of control thus allowing exploitation of individuals by one another. Under Socialism/Communism in contrast government exercises a high degree of control, creating exploitation of the hard worker and the enterprising entrpreneur by rejecting individual initiative and by requiring the industrious to subsidize the lazy ; in addition, totalitarianism makes for government oppression of personal liberties. The political Policy of Non-Aggression aims to provide enough government control to prevent individual exploiting individual, but not enough to create exploitation by government. And this clearly definable Policy ensures a discipline upon govenment, through comprehension and thus "supervision" by the country's thinking people and institutions of learning.

In respect of Personal Liberties, the Policy of Non-Aggression ensures freedom from personal intrusion (injury, theft etc) by individuals, and also from government instruction. The latter ensures among other things, minimal taxation to cover the costs of political administration only, which must itself observe the disciplines of maximum efficiency at minimum cost.

Applied to the Use of Natural Resources, the Policy of Non-Aggression ensures a fair distribution resources, requiring in turn a national land-use plan taking in habitation and transport patterns, exploitation of major resources, etc Feudal titles to resources have no place under this policy, though feudal landowners may wish to play an active (and important) role in the more positive and prouse of natural resources especially in agriculture, providing management expertise. For agriculture now becomes an industry, efficient, fair to employees, offering good produce and good value to consumers.

In the sphere of the economy, the Policy of Non-Aggression requires fair exchange, between employer and employee, as well as between producer and consumer. This in turn leads to a nationally applied system of wage-evaluation based on work done, and this works through to price evaluation. Additionally, national Standards of efficiency and quality in design, production and management also have broad force of law. Overall planning guidelines give guidance to economic activity in general, and specifically to investment through the banking services.

This economic policy-package creates stability of wages, prices and money, thus allowing expansion without inflation. Responsible banking channels investment into expansion, guided by Standards, and overall planning Guidelines.

The Five Elements of Politics

. Perhaps the most important element in a country's political situation is constitutional stability, and with it, the stability, loyalty and discipline of the country's forces (police and arm forces). Without these basic essentials, there is chaos and no further discussion or debate is possible. With these two factors (force and constitution) taken for granted, we can now add Political Expertise, which involves the combination of Policy and Interpretation to produce legislation for freedom and prosperity. Thus on government side we have Force and Political Expertise, the two united by the Constitution.

On the other side, among the governed, there are the strong and the weak. There are those with historical, social, economic or intellectual power, and those without Under Capitalism/Conservatism, the Strong exploit the Weak. Under Socialism/Communism, the reverse happens. If the entire population is to unite to create a real prosperity for all, then no one must exploit anyone—which is precisely the definition of the Policy of Non-Aggression. A nation with a high overall level of prosperity is an aim which is in the interests of everyone, rich and poor. The benefit to the presently poor is obvious ; for the rich it is worth considering that an average middle class citizen of a wealthy country has far more facilities and enjoyment at his immediate disposal than a wealthy citizen of a poor country. The whole country must unite behind a truly fair and objective set of political rules—something which the Policy of Non-Aggression readily and consistently provides.

If we may now assume, therefore, a general readiness to accept fair-rules-for-all in the cause of increasing overall national prosperity, and if we may also assume political stability of Constitution and Forces, we are left with the issue of Political Expertise—Policy-Interpretation. And it is in this area that the present series of articles has concentrated.

In particular, the series has been directed to the country's thinking people—individuals, people in schools and universities, special-interest groups, societies, research institutions and so on. And we have been stressing one central message : You collectively have the expertise, and now is the time for it to be liberated and harnessed for the cause of Action for Development.

Three essential rules must apply however. First, a coherent Policy is vital ; the two existing policy options are not in themselves suitable, and the Policy of Non-Aggression has been expounded to fill this need. Second, discipline is essential—decipline to coordinate one's activities with those of others in order to present a single coherent Plan. Third, all talk, discussion, study and theorizing must be firmly directed to one end : Action for Development.

Agenda for Action for Development

The main challenge is of course the formulation of a National Plan of Action for Development—requiring in turn the personal initiatives, the research by individuals and institutions, the over-riding need for discipline to accept the Policy of Non-Aggression and interpret it correctly, the discipline to coordinate one's activities with those of others, and the ever-present awareness of the need to reach decisions rather than just talking about them. Out of this, a Plan will gradually be formulated. Each component Project when provisionally finalized by the individuals and institutions working on it, must be publicized for national circulation. Then follows the final "polishing" resulting from the ensuing debate and comment.

The first step, therefore, is the formulation (and of course subsequent up-dating and revision) of the Plan.

The second step should then follow. This would be the availability of the Plan or any of its component parts as an Advisory Service to all comers : individuals who want to lead a personal life of political non-aggression, industries requiring information on Standards recommendations or fair wage evaluation, even perhaps smaller developing countries seeking advice on specific aspects of economy.

The third step would be a major political acceptance, either through a government accepting the Policy and Plan wholesale, or through the birth of a new Political Party giving explicit support to the Policy of Non-Aggression and its resultant Plan.

For the moment, however, the first step is where we must concentrate our efforts. If this project is to succeed it requires two things from anyone and everyone who could make any kind of contribution : it requires Initiative, and Discipline. It requires Initiative to make the mental and physical effort required to step forward and say "I can do this" and it requires Discipline thereafter to respect the Policy and coordinate one's activities with others'.

And let those thinking people who do not come forward never dare again to criticize or to complain about their government or the state of their country. To repeat a quotation :

> "all that is necessary for bad policies to rule
> is that men of good ideas should do nothing".

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point of view of equity but these do not always succeed for want of whole-hearted cooperation and public sympathy.

Considering all the results observed in this study it can be concluded that the part-owner/part-share and tenant cultivators are the uneconomic cultivators. It has also been found that the owner farmers of below 10.0 hectare are no more advantageous or remunerative group than the other two uneconomic groups This clearly indicates that economic position of the cultivator plays an important role. Among the various economic factors operational holding plays the major role. Thus, it may be concluded that if security of tenancy and ownership right is provided to the less privileged groups they can increase their condition as well as agricultural production. Relaxation of sharing terms in favour of these groups and reduction in rent will act as incentive to these groups.

Fiscal Marksmanship–A Note on the New Zealand Experience

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In common with most high income nations New Zealand has been undergoing prolonged inflation and balance of payments difficulties. Since 1974 the country has experienced[1] double digit inflation, reaching a peak of over 16 percent in 1976. Despite the appearance of high unemployment (high that is by New Zealand's post-war standards) successive governments have failed to bring inflation down below the ten percent figure, despite election promises that this was a priority for both National and Labour parties. The purpose of this Note is to examine the recent record of the two parties with regard to their success, or lack of it, in producing budgetary estimates of revenue and expenditure which correspond to the actual out turn of two sides of fiscal activity. In order to eliminate policy change due to gevernmental changes, the years 1973-75 have been chosen for the Labour administration and 1976-79 for the National administration. These are the New Zealand fiscal years, ending at March 31st. These periods represent periods of uninterrupted rule by the two parties, uncomplicated by change in fiscal policy caused by changes in government. (Labour was elected in November 1972 and National was elected in November 1975 and reelected in November 1978). Table 1 summarises the success of the two parties in estimating the expenditures with the broad categories laid out in the budgetary statements.

As will be observed from Table 1 there appears to be little to choose between the two Parties in terms of the accuracy of their budgetary forecasts of expenditure. The ratios of Table 1 indicate a wide variation within the departmental estimates for both periods

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[1] See "The New Zealand Economy in Crisis" Economic Affairs, March 1977.

Table 1

Ratio of Actual/Estimated Expenditure. Functional Classification

	73/4	74/5	76/7	77/8	78/9
Administration	119	128	95.4	104	117
Foreign Relations	105	103	97.7	100	105
Development	87.5	133	87.4	141	111
Education	108	104	101	101	110
Social Services	106	103	102	103	104
Health	103	105	103	100	109
Transport & Communications	94	97	124	104	100
Total (aggregate error)	106	108	100	106	108

(Source : NZ Budgetary Statements 1973-79)

covered. (In Table 1 a figure of 100 indicates an exactly accurate forecast). If one averages the errors of estimate (Sum of Errors/No. of Estimates) it emerges that the average error. is 9.9 percent for 73/5 (Labour) and 7.5 percent for the years 76/9 (National). At the disaggregated level there is thus some evidence that National Ministers of Finance (or individual Cabinet Ministers responsible for departments) are better predictors than their Labour counterparts. On the other hand at the aggregate level, which is presumably most important for macro-economic balance, there seems little to choose between the two performances. It should be noted that in the year 1976-77 where aggregate prediction and out turn matched (ratio=100) the aggregate figure concealed significant variations within the total. This suggests that the 1976-77 outturn was something of a fluke.

Table 2 summarises the relationship between the estimates of return from taxation and the actual outturn. The simple statistical procedure follows that of Table 1.

Table 2

Revenue from Taxation : Ratio of Actual/Estimated Revenue
(March years)

Tax Source	73/4	74/5	76/7	77/8	78/9
Income Tax	105	102	109	98	95
Customs & Excise	104	98	104	93	104
Highways	102	98	105	100	105
Other	111	92	101	105	106
Total	105	100	107	97	100

(Source : As in Table 1).

An examination of Table 2 indicates yet again there is little to choose between the two administrations as to accuracy of prediction on the revenue side of the accounts both at the aggregated and disaggregated levels. Performing the same procedure as was applied to Table 1, it appears that the (Sum of Errors/No. of Estimates) ratio is 4.5 percent for the years of Labour administration and 6 percent for those of National government. Whilst both tables give grounds for questioning the constitutional effectiveness of Parliament in its traditional role of appraising expenditure of individual departments, the figures also tell us little about the effectiveness of politicians in predicting levels of macro-economic balance. That is, if the aggregate budgetary figures are intended to provide levels of taxation and spending to maintain economy at some desired level of activity, it is not clear that either administration really has achieved a deliberate macro-economic balance, subject to the aforementioned goal. The figures do, however, indicate some success in bringing about a rough balance between revenue and expenditure. To complete the fiscal picture we turn to figures of governmental borrowing. Table 3 gives the figures for estimated as against actual borrowing for the years listed on the two tables preceding.

Table 3

Relationship between Actual and Estimated Borrowing

$ NZ millions

	Estimate	Actual	Ratio Actual/Estimate	Total Average Error
73/4	232.0	155.1	66.8	27.5
74/5	159.0	193.9	121.9	
76/7	847.0	506.1	59.7	53.1
77/8	382.0	694.8	182.0	
78/9	1050.0	1445.9	137.0	

(Source : As in Table 1).

As will be observed from Table 3 estimates of borrowing requirements are much less accurate than the estimates of Tables 1 and 2. Whilst this can be construed as further evidence of poor fiscal marksmanship a little more elucidation of these figures is required. In fact, anyone with a little knowledge of New Zealand economic policy since the crisis of 1974, is aware that borrowing by successive governments has been adopted as an alternative to the savage deflationary measures which (might) bring the overseas account near to a balance. It can be stated that borrowing by governments (including overseas borrowing) has been the main policy adopted by both parties to avoid both a savage cut in welfare spending and a catastrophic increase in unemployment. Even if we regard the large errors in borrowing estimates seriously in the long-term because of accumulated foreign debt, the short-run macro-economic implication may not be serious. Firstly the borrowing error does not seem to be large in terms of its relationship to GDP (although recent figures are not available). Also if we regard borrowing in this context as a reflex response to the failure to achieve balance both externally and in terms of the annual budget, these errors can be viewed as a sign of governmental unwillingness to accept major deflationary policies.

Conclusion

Obviously this note does not cover many questions raised by the recent experience of budgetary prediction in New Zealand. One interesting question, for instance, is how the move towards cash benefits as against benefits in kind affects the macro-ecconomic impact of budgetary deficits (or surpluses). This is important given the controversy surrounding the distributional effects of the National government's superannuation scheme. The author hopes, however, that the simple arithmetic used in the note, will further raise doubts as to the effectiveness of traditional parliamentary review procedures based on the annual budgetary statement.